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# American Cinematographer

INTERNATIONAL JOURNAL OF FILM  
AND VIDEO PRODUCTION TECHNIQUES

DECEMBER 1982



## PHOTOGRAPHY FOR DAS BOOT

FAERIE TALE THEATER

NIGHT OF THE HUNTER





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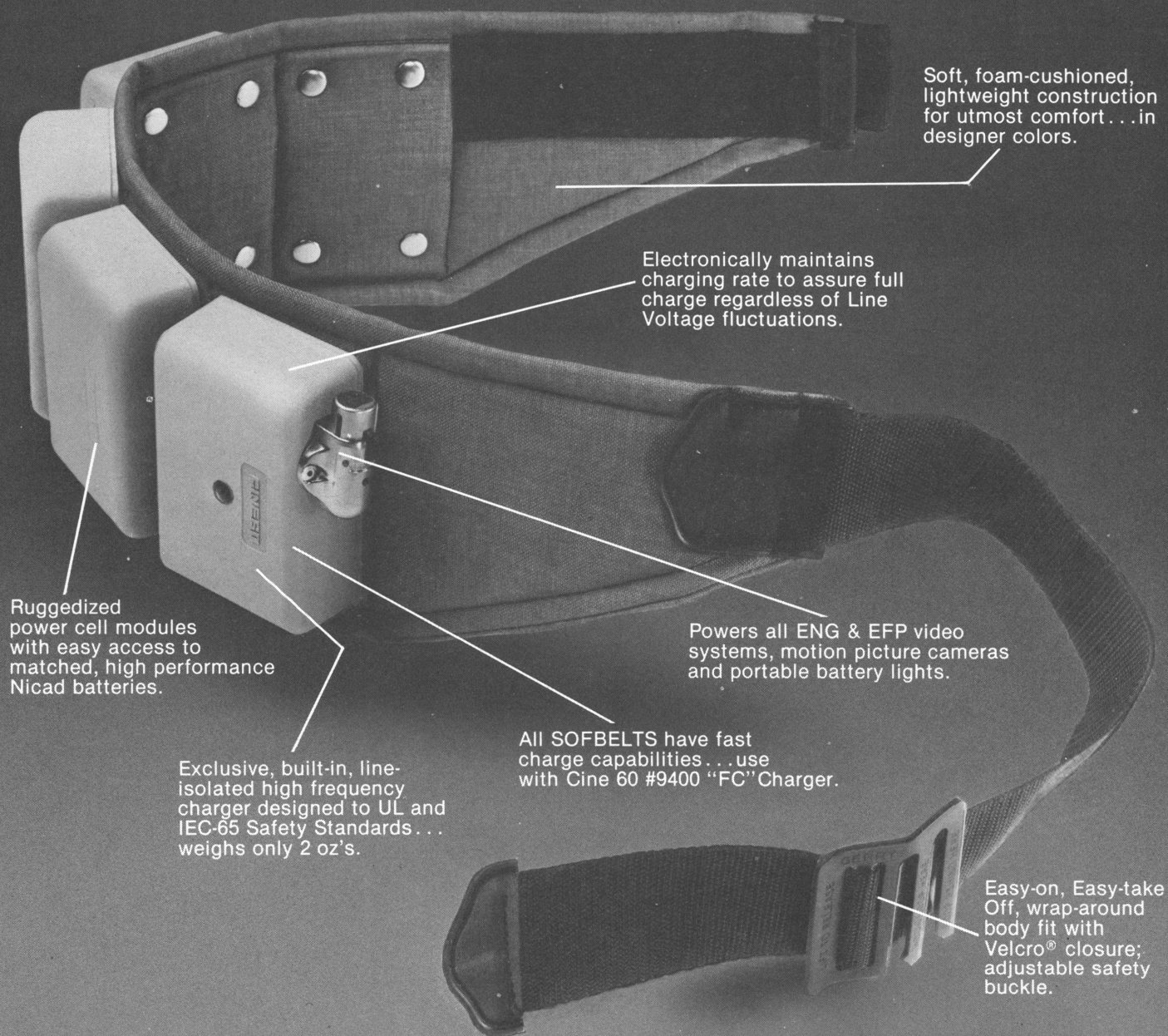
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DECEMBER, 1982

VOL. 64, NO. 12

## FEATURE ARTICLES

- |                                                                                                            |      |
|------------------------------------------------------------------------------------------------------------|------|
| <b>AMPEX NAGRA VPR-5</b><br><i>World's Lightest 1" Videotape Recorder</i>                                  | 1259 |
| <b>TOP OF THE LINE</b><br><i>The \$100,000 Video Camera</i>                                                | 1263 |
| <b>3-D TELEVISION</b><br><i>Coming at You from the Tube</i>                                                | 1269 |
| <b>CREATING NIGHT OF THE HUNTER</b><br><i>A Cinematographer's POV of a Classic</i>                         | 1272 |
| <b>PHOTOGRAPHY OF DAS BOOT</b><br><i>Fast Film, Hand Held Tracking Shots &amp; Sea Sickness</i>            | 1277 |
| <b>CREATING A WORLD FOR THE DARK CRYSTAL</b><br><i>Four Tons of Latex &amp; 100 Hidden Performers</i>      | 1282 |
| <b>PHOTOGRAPHING THE DARK CRYSTAL</b><br><i>Ossie Morris Describes His Journey to the Castle</i>           | 1290 |
| <b>FAERIE TALE THEATER</b><br><i>Shelley Duvall's Unique Video Productions</i>                             | 1294 |
| <b>EDGE OF THE ART</b><br><i>A Report on Computer Graphics at SIGGRAPH</i>                                 | 1301 |
| <b>ANDY WILLIAM'S EARLY NEW ENGLAND CHRISTMAS</b><br><i>Combining 16mm and Video Production Techniques</i> | 1306 |

## DEPARTMENTS

- |                            |      |
|----------------------------|------|
| <b>From the Editor</b>     | 1241 |
| <b>Letters</b>             | 1244 |
| <b>The Bookshelf</b>       | 1250 |
| <b>Talking Technically</b> | 1254 |
| <b>What's New</b>          | 1256 |

## ON THE COVER

The Skeksis perform their power ceremony in the Crystal Chamber of the castle of the Dark Crystal. THE DARK CRYSTAL was produced by Jim Henson and Gary Kurtz, directed by Jim Henson and Frank Oz, and photographed by Oswald Morris, B.S.C.



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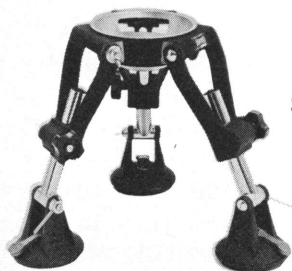


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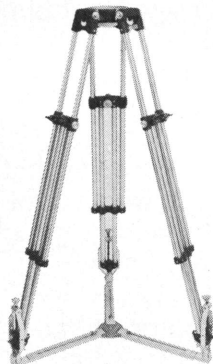


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# FROM THE EDITOR

I recently overheard a cameraman describing how a legendary Hollywood cinematographer defined success, or at least one aspect of success. He said, "You know you've reached the top when you can tell the director to go jump in a lake." Actually his words were a good bit stronger than that, and the younger cameraman seemed to derive vicarious satisfaction from expressing the sentiment although he was quick to add that the elder cameraman had, of course, been too much of a gentleman to have ever actually said that to a director.

It is a sad commentary of working relationships in film production that any cameraman would view being able to tell off a director as the mark of success. It implies an adversary relationship between two collaborators and seems to indicate resentment or hostility on the part of the cameraman. Even in its most positive form, the desire for complete creative autonomy as director of photography seems to me to be misguided. There are cameramen who pride themselves on being so trusted and respected that the director "leaves them alone." At the very least this atomization of the creative process seems to me to represent missed opportunities.

The first metaphor that occurs to me in thinking about the relationship between a director and a cameraman is that of a ship at sea. The navigator may feel that he knows more than anyone else on board about how to steer the ship, but it is hardly appropriate for him to want to tell the captain to jump overboard. The navigator may be able to plot a course which will avoid any unpleasant weather and take in all the most scenic ports en route, but he is not in the best position to evaluate a course in terms of the overall mission of the ship or purpose of the voyage. The scenery and weather may be great in the Caribbean, but they are irrelevant if the ship is loaded with perishable fruit for Norway.

It sometimes seems that it would be possible to make a film in Hollywood without a director. The actors could work out the scene among themselves, the cameraman could

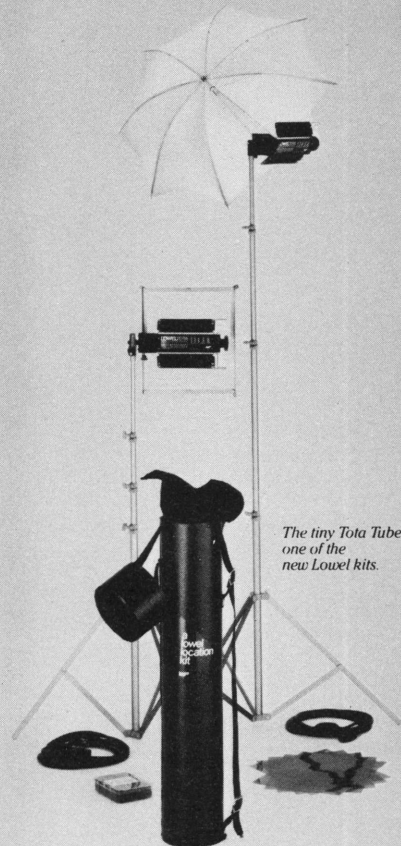
decide how to photograph it (consulting the editor if necessary), the production manager could decide when enough time had been spent on each scene, and everyone else would do their job as usual. While this is a tribute to the professionalism of Hollywood and there may have actually been some productions which would have fared better if the director had stayed at home, it is obviously not the way to make the best possible film. What you would get is a film totally lacking in integrity (in the literal sense of wholeness), a film without vision or coherence—regardless of how polished and professional a job everyone did.

Henry Ford had a great idea when it came to making automobiles, but an assembly line is no way to produce art no matter how collaborative the medium. It is one thing to realize that efficiency in production requires specialization among the crew and another to think that each specialist can function autonomously without any direction. Only if everyone shares the same vision of what is being created is there any hope of making a great movie, and the best way to insure that everyone shares the same vision is by communication with one person who is primarily responsible for interpreting the script.

An inept director may make it more difficult for a cameraman to do good work, just as an insecure cameraman may resist a director's attempts to create something unique, but there are miraculous things that can happen when a director and a cameraman truly collaborate. Not only is the film better than either one of them could have created on their own, but the process of making it is probably a much more rewarding human experience. There is no limit to the depth and intensity of involvement that can come when a director and a cameraman are both wholly committed to realizing a shared vision. There are few forms of work which can offer this kind of satisfaction; and, if a cameraman feels the director is an obstacle to getting his job done, either he is cheating himself out of the joy of true collaboration or he has never worked with a real director.

—RICHARD PATTERSON

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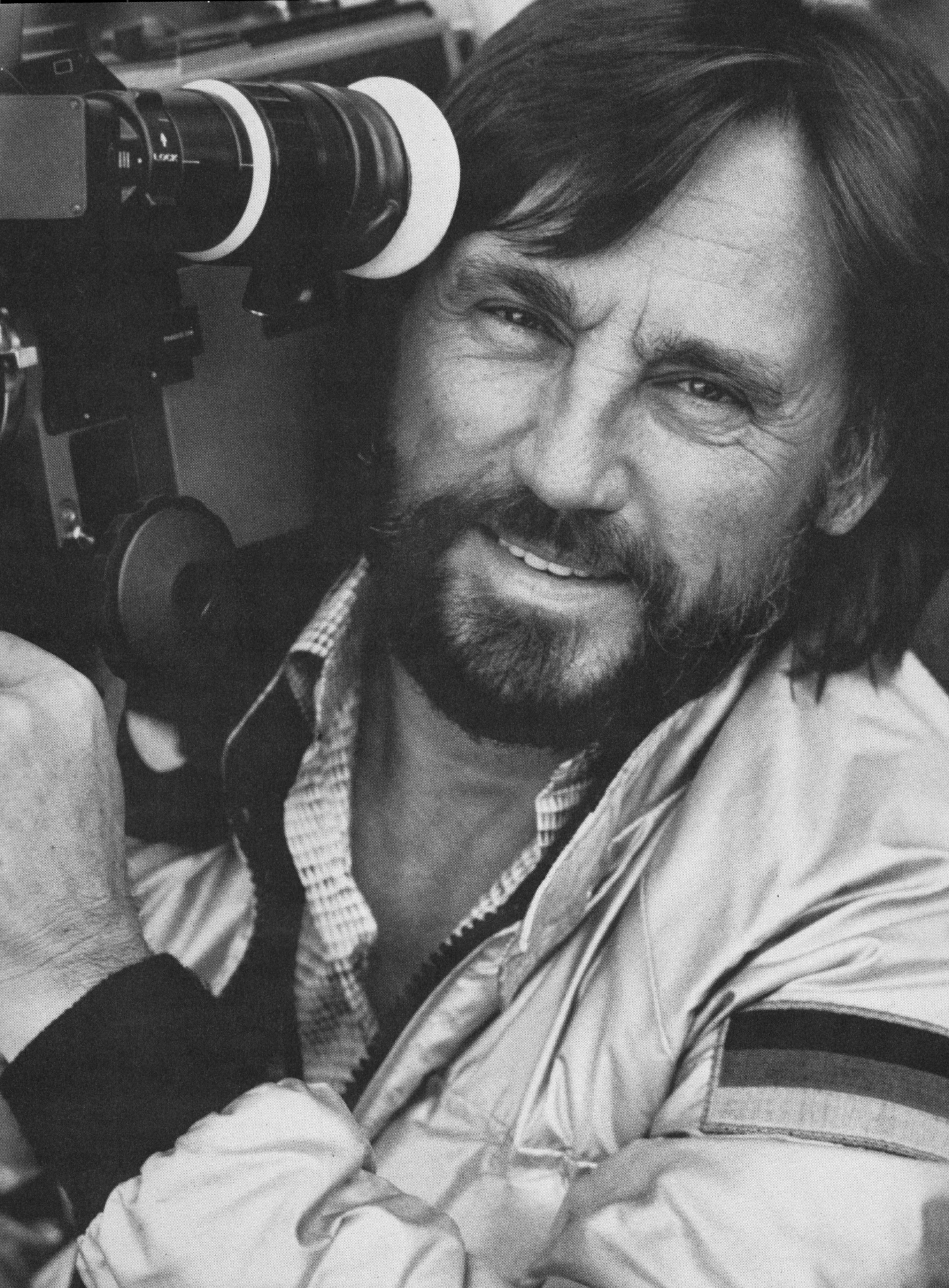
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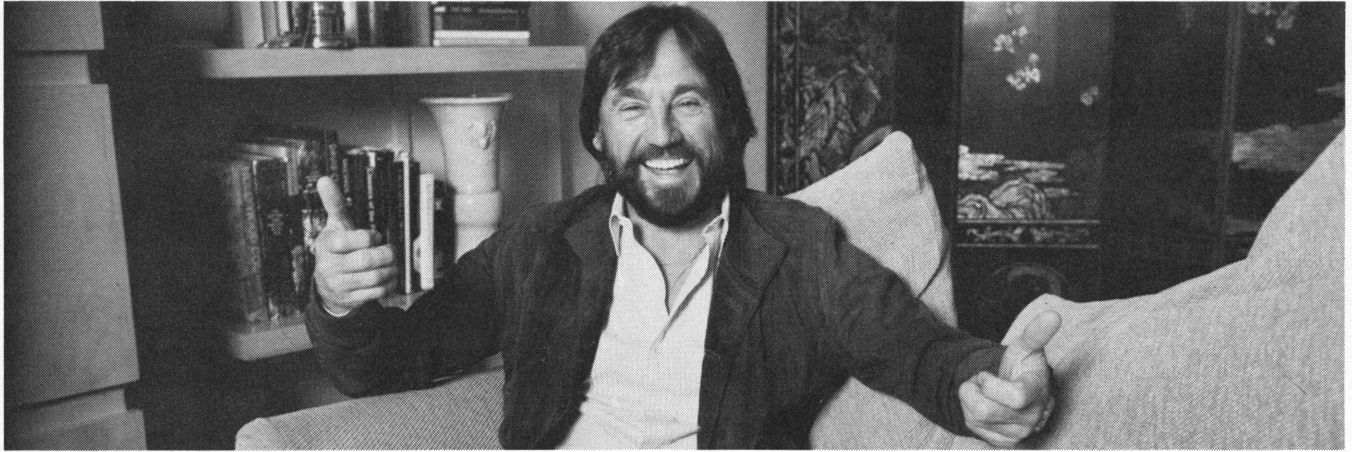
  
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# ZSIGMOND



*"The most memorable moments of any film are created by light."*

Born in Hungary, Vilmos Zsigmond has become in the past decade one of America's premier cinematographers. He won the Academy Award for *Close Encounters of the Third Kind*, and an Academy Award nomination as well as the British Academy Award for *The Deer Hunter*. His work on *The Long Goodbye* earned the National Society of Film Critics' Award for Best Cinematography of the Year. His latest film, *Table for Five*, is being shot on location on the Mediterranean.

"My style has changed through the years because technology has changed. We now have faster and better films, and lighting equipment is getting smaller and better. Today you can shoot a film that looks as if the cinematographer didn't use any supplemental light at all. It's a very natural look. And audiences today are much more educated, to the point that, when they see bad lighting, they notice it right away. So we're really forced to make a film look and feel as natural as possible.

"I try to light so that it feels as if it comes from natural sources. That's why I like to have windows in my shots—windows or candles or lamps. Those are my true light sources. Studying the Old Masters, Rembrandt, Vermeer, De la Tour, I found that they painted their best works relying on light effects coming from realistic sources. They even selected their subjects because they loved the light and the people. They were very selective and improved upon nature. They simplified and eliminated

multiple shadows to concentrate on the dramatic. That is what a cinematographer does: improves on nature.

"It was easier to shoot in black-and-white. All you had to worry about was light and shadow, contrast and abstract forms. I can do anything in color that I can do in black-and-white—and more. And if you want a black-and-white effect, well, you can do that, too. Thinking of paintings: Can you honestly remember any great painting that is black-and-white?

"As a cinematographer, I often get too much credit for the look of a film—like the red, white and blue scheme of DePalma's *Blow Out*, a film I worked on. A lot of these things are worked out in advance, by the art director, the director, the writer. After all, they spend up to a year preparing a picture before I come on board.

"I like a soft look, and there are many ways to get it. On *Close Encounters of the Third Kind*, all the effects you remember were created by light. In fact, the most memorable moments of any film are created by light. On *McCabe and Mrs. Miller*, I used lots of diffusion filters, and forced the film, and lots of flashing of the negative, which desaturated the colors and made the black sort of dark gray. The whole film had an interesting period look. On *Heaven's Gate*, we didn't filter the camera at all—simply used the natural softness of dust outside and smoke inside. And we flashed the print itself, print by print.

"I like the look of the new Eastman color high-speed negative film 5293. It will bring a new look to the industry. It's softer and looks good. Its terrific sensitivity will

enable us to shoot under difficult conditions we only dreamed of. Actually, I go after texture and light primarily. I plan to use 5293 for all of my next feature, and not just the low-light segments. There's no problem with overexposure with it. It has a wider latitude.

"I've shot commercials, too—both film and tape. The film look is a lot better. You can't push videotape, either. Videotape can be complicated: In studio it is fine, but on location things break down in a way that doesn't happen with a camera. A film camera is actually very simple. Videotape is just not good enough yet. There's not sufficient definition to project on a big screen. It will probably be decades before they come up with a tape that matches today's image quality of film."

If you would like to receive our monthly publication about filmmakers, KODAK Professional Forum, write Eastman Kodak Company, Dept. 640, 343 State Street, Rochester, New York 14650.

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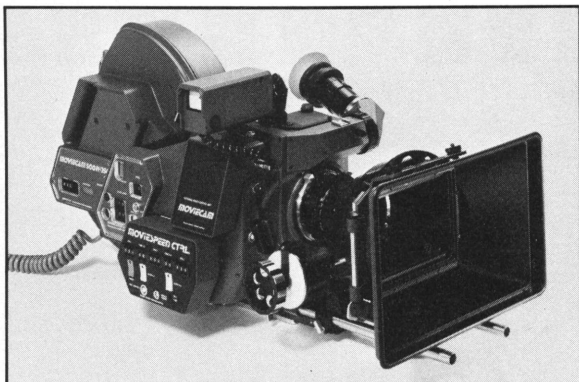
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## LETTERS

### Super-16

We much appreciate your mentioning our new movie *WILDROSE* in the context of an article about shooting features in 16mm which appeared in the September issue. If we may, however, we'd like to correct a couple of errors.

Todd Crandall was mistakenly identified as director of photography, whereas he served as first assistant to Peter Stein, our D.P. Together they recommended and made it possible for us to use Arriflex's first Super 16mm camera available here in the States. It performed beautifully. For your readers' interest, we used the Aaton Super 16 camera as our second camera. With the exception of a few problems with the magazines, it performed very well. One sequence involved three cameras, and we used Peter and Todd's Arriflex SR2 regular 16mm in addition to the two Super 16mm cameras.

Finally, we would like to clarify that the iron mines of the Mesabi Range are all open pit rather than underground mines. If anything, the blowing particulate matter presents more of a threat than might be the case underground. We are very pleased to report that, due to Todd's care, the film remained impervious.

In general, we are extremely pleased with our decision to shoot in Super 16mm. The reduced scale made our shoot a more personal one. The quality of our camera department and of our equipment produced images which promise to yield a spectacular blow-up to 35mm.

John Hanson & Sandra Schulberg  
Eveleth, Minnesota

*In addition to the Arriflex and Aaton Super-16 cameras Eclair has just introduced a convertible 16/Super-16 camera called the Panoram which converts by altering the viewfinder mask, the aperture gate and the optical axis with one simple adjustment.*



Something else worth noting also is that it is possible to modify a Rank Cintel to re-center a Super-16 frame for transfer to videotape so that it is cropped equally on both sides. This has been done in Scandinavia for some time with prototype equipment and Rank is currently developing a production model of the aperture gate and auxiliary lens required to achieve this with no loss in image quality.

### 3-D Systems

For both personal and professional reasons I was happy to see the 3-D article in the October issue and look forward to more, especially more technical information on the various systems available now. I would like, however, to question a point made by Michael Starks and offer some questions for further research.

Starks is in error when he says the anaglyph process cannot be used in color since this is the basis of the Video West process highlighted in your famous April, 1974, 3-D issue (and admittedly not heard of since). I have only the stills in that issue to go by, not having had a chance to see film tests shown at USC in 1972, so I don't know how the process compares with polaroid systems, but from a business standpoint, it is the most economically viable of the 3-D processes.

In my research on 3-D I have run across references to the fact that during the early Fifties boom experiments were conducted using the Vectorgraph system to yield single-strip prints. In this process the polarization is built into the images as they are superimposed upon each other on the print. This would eliminate many of the projection problems especially light loss and is, I feel, worthy of further investigation.

It would not, however, eliminate the major flaw I see in the current single lens systems, not addressed by Starks, but brought vividly home to me last spring after I saw single system prints of DIAL M FOR MURDER and PARASITE within a week of each other. The latter used one of the current single lens systems while for the former the original two-camera negatives had been duped onto a single internegative by one of the methods described by Starks and was infinitely sharper and brighter. I feel that many current complaints of eyestrain stem from the poor resolution resulting

from using half or less of the 35mm frame for original photography, complicated by the projection problems. Being aware of the economic unfeasibility of 65mm, I wonder if any experiments have been made adapting single lens systems to VistaVision? I have also heard of, and would like to find out more about, experiments in the Fifties adapting two-color Technicolor cameras to single system 3-D photography.

Rick Mitchell  
Hollywood, CA

*Lenny Lipton describes the Vectorgraph system in his book Foundations of the Stereoscopic Cinema and points out that the major obstacle is the fact that it requires an imbibition printing process. Daniel Symmes, whose article on 3-D video appears in this issue offers the following additional comments on Starks article:*

*The most common dual camera system of the 1950's was with the cameras facing each other, looking into two mirrors set at 45° to the lens axis. The "L" configuration using a beam splitter was used for two 3D's by MGM (as supplied by Technicolor using 2 three strip cameras!!) and two pictures by Paramount. It does remain as the most effective camera configuration though.*

*On page 993 it is stated tolerances of eyestrain-free 3D haven't been determined. The Institute of Stereoscopic Research was established in 1973 by experienced 3D scientists for the collection and dissemination of such data. The result is a series of "I.S.R. Rules and Recommendations" available from the Institute at 256 South Robertson Blvd., Beverly Hills, CA 90211.*

*Regarding camera shutters and parallax, a vertically moving shutter is not ideally desirable while a horizontal is. Mathematically a vertical shutter can cause vertical parallax because of a 1/96 of a second time difference between the upper and lower exposures, though in actual practice the problem is generally within "acceptable" limits.*

*Finally, if one is to evaluate 3-D films, one must study HOUSE OF WAX (properly projected). By far it is still the finest example of 3-D film to date (at least eye-strain-wise). And it was guided by one-eyed Andre de Toth!*

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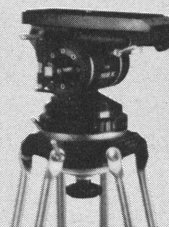
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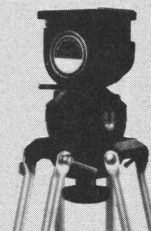
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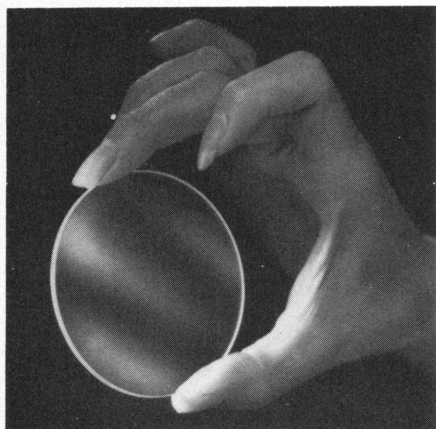
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### Filming Video Monitors

In shooting 16mm, we keep finding it necessary to have video monitors in our shots. We have tried changing our film speed (to 15 fps) and our shutter speed (to 1/60th second) and we still get occasional roll bars and/or flicker.

What is the best way to shoot video monitors on film at sync speed?

David Gudaitis  
Indiana University  
Audio Visual Center  
Bloomington, Indiana

Bill Hogan who received an Academy Award for his work on a 24 fps video system to be used in conjunction with filming says that modifying the frame rate of either the video system or the film system so that they are both running at 24 or 30 fps is the best solution. Modifying the video system is more complicated than changing the film rate, and generally for features involving video monitors the material to be displayed on the monitors is shot at 24 fps especially for the playback system. It is possible to take existing video material and convert it to 24 fps in a way similar to converting to a foreign standard. Your best solution may be to shoot film at 30 fps, but it is necessary to lock into the video system and adjust the phasing so that the image is exposed while the video screen is being scanned. Arriflex and Panavision can supply accessories for locking into the current going to the video monitor and it may even be possible to get one with a phasing knob by means of which the shutter movement can be adjusted relative to the scanning of the video screen. The adjustment can be made by viewing the screen through the moving shutter (i.e. with no film in the camera). What you see is what'll get.

### Foam and Clay

I enjoyed your October issue's article concerning the special effects for STAR TREK II. The article mentioned two special materials: Roma clay and Schram foam. I would like to know where I might obtain these materials so that I might do some experimenting myself.

Also whatever happened to the articles that were supposed to appear in the September '82 issue concerning E.T.?

And finally REVENGE OF THE JEDI will be released in May of next year. Could you tell me when the film will be covered in AMERICAN CINEMATOGRAPHER?

Jay Gormley  
Port Angeles, WA

*Roma clay is not so exotic as it may sound and can be found at almost any ceramic or art supply shop. It is simply a modeling clay that comes in various densities. Schram foam can be obtained from Windsor Hills Make Up Lab, 5226 Marymount Drive, Los Angeles, CA 90043 (213) 291-5891.*

*E.T. finally phoned to say he would be making an appearance in January or February. We'll believe it when he shows up.*

*REVENGE OF THE JEDI will probably be the cover story for our June or July issue.*

### Brown's Sozzled Star

I have the current issue of AMERICAN CINEMATOGRAPHER and I am delighted by the many kind things you have written about me. I am even more delighted by the things you did not say.

I'm just the other way. For example: you write of Ian Keith as 'a fine actor whose career was blighted by too great a resemblance to John Barrymore'. True. Very true indeed. No doubt about it whatsoever. I wrote the very same thing in this book I'm struggling with, but with somewhat different effect. I'll quote from a scene dealing with casting:

"Who's to play the lead"?

"Ian Keith."

My heart plunged to the bottom and stayed there. Ian Keith was probably the best known and least used actor in the business. Not that he wasn't good. His performances ranged from excellent to brilliant and he could play anything. But he was a strict traditionalist bound to follow the precepts of the great masters of the thespian art such as Booth and Barrett, MacReady and Keen, who felt they could never reach the pinnacle of true greatness unless they were utterly sozzled.

My own experience with Keith confirmed this absolutely. We were working late, breaking for dinner. Keith came back looking perfectly sober—no unsteady gait, no garrulousness, nothing. Which meant nothing be-



cause he could carry a load that would stagger a beer truck without showing it.

The first setup was a closeup of Keith. He took his place for lighting by the cameraman, Ted Tetzlaf. The instant the spotlights were trained on Keith they seemed to have the magical power to waken all the ham in him and Keith began to act as though under some hypnotic spell as he acted out a story of an acrobat trying to sell his act to a bored and cynical booking agent. He did miraculous stunts, such as wrapping his legs around his neck and doing a tap dance on his hands. When he was finished the agent asked sourly, "What do you do for an encore?"

Keith answered with devastating irony, "I stick my finger up my behind and hold myself out at arms length!" This, vividly pantomimed by outstretched arm and stiffly erect middle finger, brought shouts of laughter from everybody on the set but me. There was no use even trying to go on, because Keith drunk was a blatant caricature of Keith sober and it would be hours before he could be sober enough to go on. So I dismissed the company and went upstairs to get hell from Harry for accepting Keith in the first place.

All of which goes to show that truth wears many faces, and that as of this moment I have a firm conviction that you are a much better makeup man than I.

Karl Brown  
Woodland Hills, CA

**Looking Forward!**

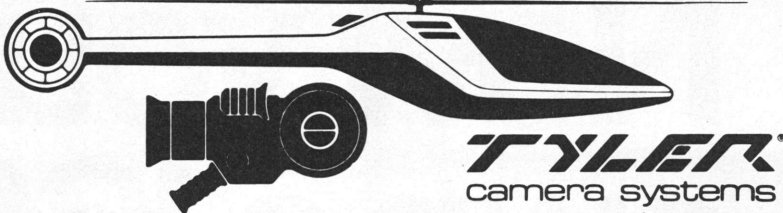
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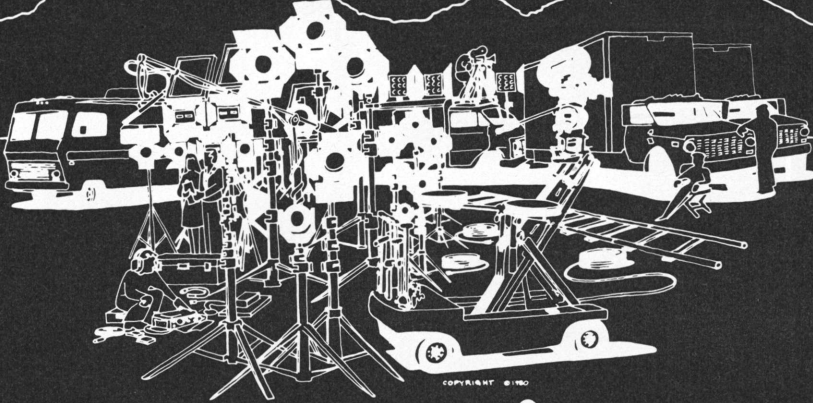
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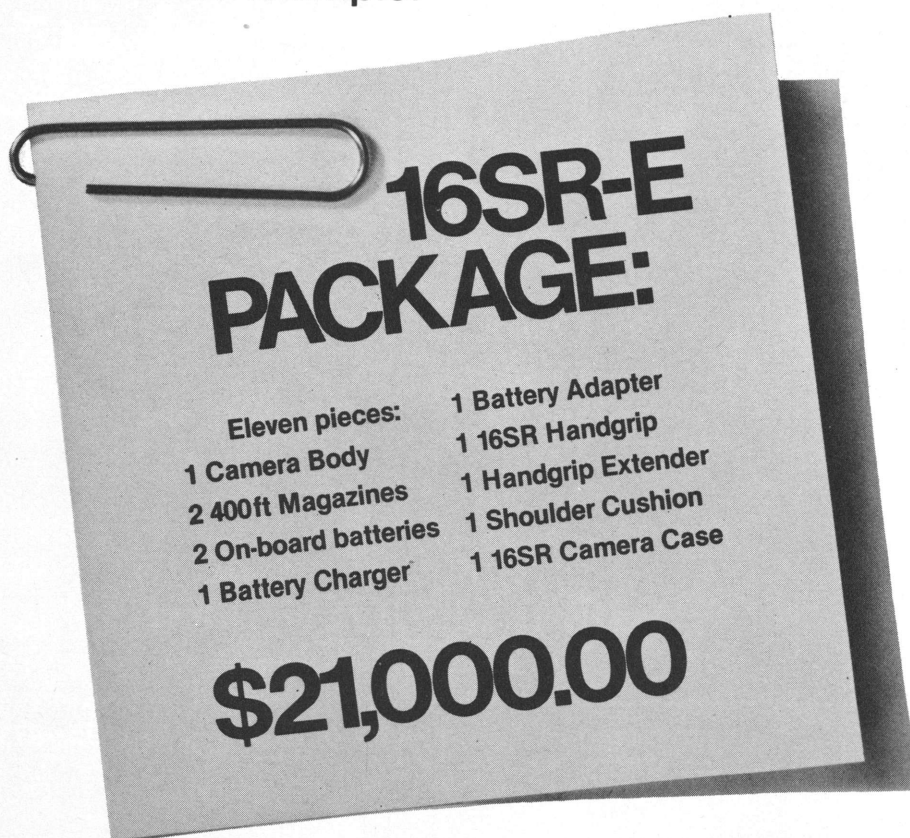
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## THE BOOKSHELF

by GEORGE L. GEORGE

### ASPECTS OF CINEMA

The same spirit of imaginative pioneering that carried the Disney vision from animation to Disneyland and Disneyworld has now taken an impressive leap into the world of the future. A superb, richly illustrated book, *WALT DISNEY'S EPCOT* (the acronym stands for Experimental Prototype Community of Tomorrow), describes the wonders of this Orlando, Florida permanent world's fair, a stunning visualization of our life in the space age (*Abrams \$35*).

Candid shots of film personalities, seemingly unaware of being photographed by the inquisitive Nat Dallinger, are collected in *UNFORGETTABLE HOLLYWOOD*. This is an attractive album, displaying the skill and sense of timing that were the trademark of the gifted artist. (*Morrow \$17.50*).

A significant selection of documents tracing the cultural history of film in America is assembled by Gerald Mast in *THE MOVIES IN OUR MIDST*. Essential issues—social and moral values, censorship, economics, technology—are considered in a wide array of texts. Their authority, pertinence and cogency provide valuable interpretations of cinema's importance in the evolution of American society. (*U. of Chicago Press \$37.50*).

In *SCIENCE FICTION STUDIES IN FILM*, characteristics of this popular genre are perceptively analyzed by Frederik Pohl and Frederik Pohl IV. Separating "sf" films (those dealing with significant new inventions or discoveries) from "sci-fi" movies (those of a junkier nature) the authors apply rigorous and reasonable standards to their knowledgeable survey. (*Ace Books \$7.95*).

Films by and about women are examined with understanding and sensitivity by Annette Kuhn in *WOMEN'S PICTURES: FEMINISM AND CINEMA*. Firmly taking the middle ground, Kuhn reduces to a rational level the conflict between strident opposition to "sexist" films and a realistic approach to today's cultural values. (*Routledge & Keegan Paul \$9.95*).



A comprehensive compilation of award recipients in over 12,000 established international contests of the entertainment world appears in Claire Walter's **WINNERS: THE BLUE RIBBON ENCYCLOPEDIA**. Oscars, Tonys, Emmys, Grammys and many others are listed for a total of some 45,000 winners. (*Facts On File* \$39.95).

The new expanded edition of **LES BROWN'S ENCYCLOPEDIA OF TELEVISION** is an authoritative reference work encompassing the world history of the medium. Factual as well as anecdotal, it covers judiciously television's technical progress, its achievements in the artistic and business fields, its leading personalities and notable shows (*NY Zoetrope* \$29.95/16.95).

Supplementing an earlier work, **RADIO AND TELEVISION: A SELECTED, ANNOTATED BIBLIOGRAPHY**, compiled by William E. McCavitt, covers the 1977-81 period. General broadcasting as well as home video and satellites are among the 1100 entries in this useful volume (*Scarecrow Press* \$12).

## THE DIRECTOR'S CRAFT

Larry Langman's well-researched **GUIDE TO AMERICAN FILM DIRECTORS** of the 1929-39 period covers all features, full-length documentaries and animated films. Over 2000 directors and 18,000 films are included in this thorough reference work (*Scarecrow Press*, 2 vols. \$29.50).

In **HOWARD HAWKS STORYTELLER**, Gerald Mast probes perceptively the director's main concern for telling "good stories" that would hold an audience. This pragmatic approach influenced his cinematic style in shaping the narrative, handling physical objects and guiding the cast (*Oxford U. Press* \$29.95).

Woody Allen's multiple talent as standup comic, playwright and director are perceptively assessed by Diane Jacobs in ... **BUT WE NEED THE EGGS**. This title, quoting the punchline of the final monologue in *Annie Hall*, summarizes aptly Allen's awareness of the contradiction between his ironic view of the world and the intellectual pretensions of his characters. (*St. Martin's* \$11.95).

The first book about a successful director of the 30s, **JAMES WHALE** by James Curtis is a detailed account of his life and work. A versatile and

talented filmmaker, Whale worked in many genres, but his reputation rests firmly on such classics as *Frankenstein*, *The Invisible Man* and *Hells Angels*, the latter officially credited to Howard Hughes (*Scarecrow Press* \$16.50).

A leader in avant-garde cinema, Stan Brakhage assembles in **SCRAPBOOK** a representative collection of his writings. This is a stimulating and often visionary hodge-podge that reflects the many facets of his imaginative creativity (*Documentext*, Box 638, New Paltz, NY 12561; \$16.95/9.95).

## PERSONALITIES IN PARADE

Sid Caesar's deeply moving autobiography, **WHERE HAVE I BEEN?**, narrates candidly the comedian's fast rise to TV stardom and subsequent film career. But a basic insecurity created severe mental problems and caused a 20-year blackout from which he would eventually emerge and face the future (*Doubleday* \$12.95).

In a sober assessment of his life, **JERRY LEWIS: IN PERSON**, the entertainer reviews his promising beginnings, his partnership with Dean Martin and its traumatic breakup, and his stubborn struggle to resume a successful career. An affecting mixture of laughter, pain and ambition, with an upbeat finish (*Atheneum* \$14.95).

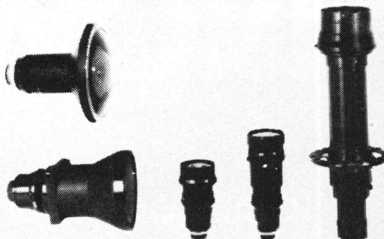
A welcome re-issue, **WILL ROGERS** is an affectionate and informative biography of the late performer by his widow Betty. Rogers, who died in 1935, is remembered as a homespun philosopher whose folksy humor was widely appreciated on stage and in films (*U. of Oklahoma Press* \$16.95/8.95).

Marrying into the famous British theatrical family, Deirdre Redgrave, in **TO BE A REDGRAVE**, describes her unexpected involvement in radical politics and stage activities. Barely surviving nerve-wracking private life conflicts, Deirdre managed to reassert her identity and write about it with remarkable objectivity and spunk. (*Simon & Schuster* \$14.95).

In **ELVIS PRESLEY: REFERENCE GUIDE AND DISCOGRAPHY**, John A. Whisler compiles an extensive and thorough cross-indexing of publications dealing in whole or in part with the entertainer, as well as a listing of over 500 of his recordings. (*Scarecrow Press* \$14.50).

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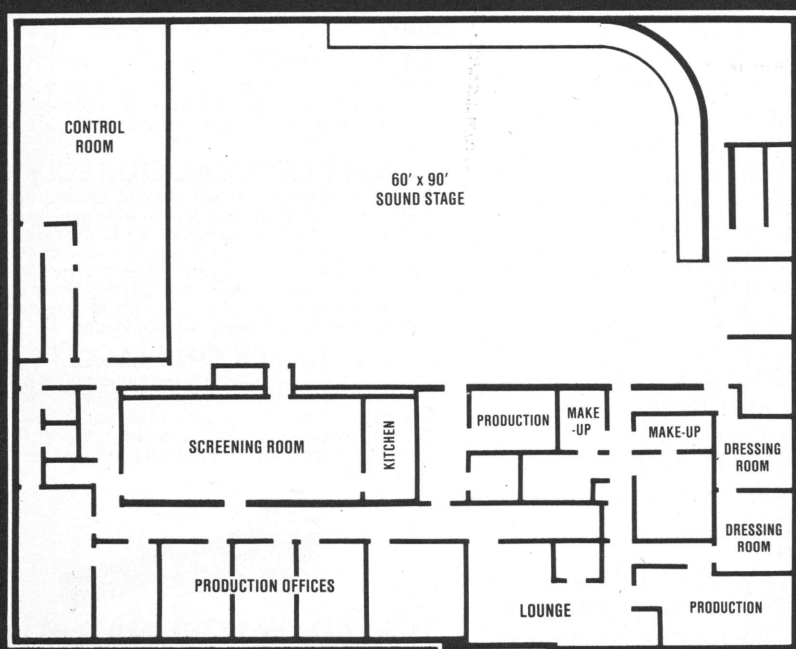
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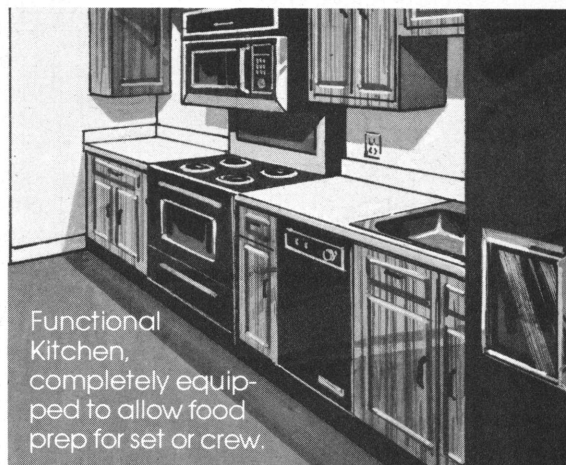
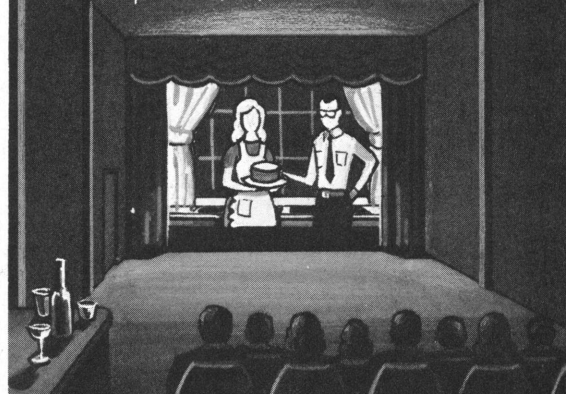
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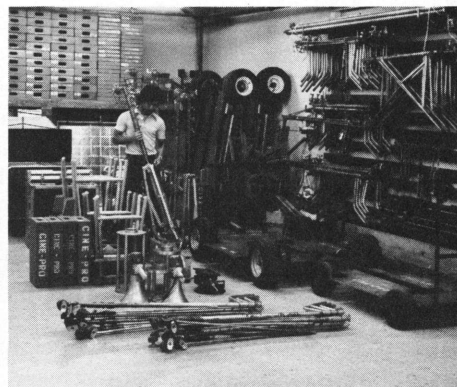
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# TALKING TECHNICALLY

By DAVID W. SAMUELSON

## TO 85B OR NOT TO 85B

I don't do a lot of filming these days but what I do do I choose carefully. Last year I was in St. Paul's Cathedral for the wedding of Prince Charles and Princess Di, this year I went to Madrid for the final of the World Cup soccer event. On both occasions I enjoyed the occasion as much as I enjoyed using a camera in anger again.

I was involved filming only the final in Madrid, joining the large crew that had already been filming the preliminary matches over a period of several weeks. With a delicious mixture of Spanish and English and with a touch of humour the film will be called "G'OLE!". THE OFFICIAL FILM OF THE XII WORLD CUP, SPAIN '82.

As usual, it seems, when I film this type of sporting event these days, I am given a 1000mm lens with the brief to pick up interesting snippets of the play, the players, the trainers and the crowd—a brief which suits me fine because among all the regular footage that finds its way into the final film there are always those moments which can be captured on a film camera not dedicated to following the play and then edited in with hindsight that TV, with its instantaneous coverage would not dare to cut away to for fear of missing a goal being scored, or whatever.

It's what lifts the film out of the TV routine.

Harvey Harrison, BSC, was the overall director of photography and among his instructions to me were not to use an 85 filter.

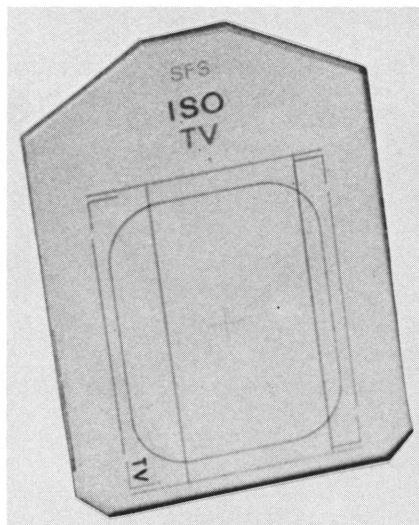
When I asked if this was because the match started in daylight and continued in artificial light, he said, 'No, it was because he preferred the look that way' and went on to say that these days quite a number of DP's do not use an 85 filter in order to achieve a certain look.

He cited in particular Alex Thompson, BSC, who won an Academy Award nomination for best cinematography for EXCALIBUR last year, which was also shot without an 85.

I later talked to Alex about this (incidentally he has been president of the BSC for the past two years) and

he says he finds that 5247 these days seems to be more balanced for daylight than for artificial light. On EXCALIBUR, and on EUREKA which he has recently completed, he was regularly getting printer lights on exteriors without an 85 of 29-30-31 which is more even than he gets on interiors and much more even than he gets on exteriors with a daylight conversion filter. In the latter case he says the printer lights sometimes seem to bear no relation to one another.

Other advantages he says are the extra film speed when shooting at



*TV ground glass marked for 2.35:1 optically printed anamorphic with common headroom with 1.85:1 wide screen.*

100 ASA instead of 64 and, more importantly, flesh tones are more creamy and therefore more flattering. Finally, he finds that when the film is printed for release there are less colour corrections to be made and that too he prefers.

Phoning and asking around I find that most cameramen, both young and old still are 85 users but it seems that everyone has their own way about being creative.

Another technically interesting aspect of this film was the format in which it was shot. My brother Michael, who was co-producer of the film, together with Drummond Challis, recognised that soccer would un-

doubtedly best suit the 2.35:1 anamorphic format but that the major sales, worldwide, were most likely to be on video cassette and there would also be occasions when the film would be shown 1.85:1 wide screen and it would be necessary to shoot with equal emphasis for all distribution outlets.

The problem was that if the film was shot in the anamorphic format there would probably be some loss of vital action when 50% of the screen area was lost in the video transfer. He felt that because, in soccer, the ball tends to travel very quickly from one side of the screen to the other there would inevitably be some unsatisfactory situations in the video transfer, no matter how good the pan and scan.

The usual advantage of maintaining the close-ups which this route normally gives would not, in this instance, necessarily be advantageous.

Alternatively, if the film was shot spherical, in the Academy format, and shown that way in the cinemas, it might then be little better than the original television presentation with little men running around with nothing very important at the top and bottom of the screen. He compromised by shooting spherical, but having all the camera ground glasses marked for 2.35:1 with the headroom marked the same as it would be for 1.85:1. In this way anamorphic prints could be made optically for cinema release and straight prints made for video wide screen and Super 8 aircraft release.

The additional advantage of this was that should the ball go out of play either upwards or downwards on a vital shot it was possible to have the optically printed anamorphic internegative made from the top or bottom half of the original negative rather than the centre and indeed of the 2,000 or more shots cut into the final film about 30 take advantage of this facility.

There cannot be many instances where a producer can have all his format cakes and eat them, but this was one of them. Perhaps we can call the system "SAMCINESCOPE" ■



# The Business of Filmmaking: Determining Client Communication Requirements.

A client's communication problems can be approached in two ways: On first meeting, you can let the client take control. Or, with some careful planning, you can lead the meeting yourself. Here are some ways to accomplish this:

Define the purpose of your meeting—you're there to get business by helping the client solve a problem. Next, pay attention to what's discussed. Listen to everything your client has to say; then ask questions to reveal what's unique about his or her problem.

It's not enough to simply *discover* your client's needs—you must help the client *understand* those needs—and agree on them. You may need to meet several times before you begin to talk about film, which is only the medium for solving the problem.

By listening carefully and questioning skillfully, you'll be able to agree on both the problem *and* its solution.

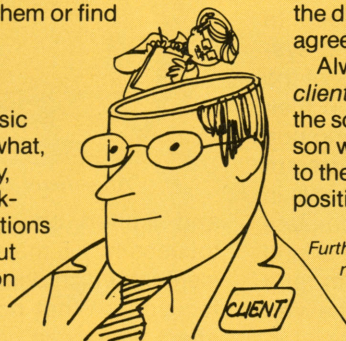
In listening, evaluate what has been said, analyze it, predict outcomes, find directions, and so on. Visualize your ideas in action, in the way your client could either use them or find them useless.

In questioning, you'll need the answers to six basic questions: who, what, when, where, why, and how. For background, ask questions like: "Tell me about your use of motion pictures" or "How are you

planning to introduce your new products?" But, when you need specific answers, ask specific questions: "How many people will you be training?" or "Who reviews film proposals?"

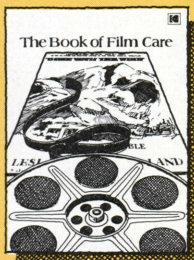
The answers will help fill in the details of a client's needs and can help you lead the discussion, clarify a point, and get agreement.

Always remember, too, that your *client* has the problem, and *you* have the solution. Position yourself as a person who can present ideas and respond to them intelligently, and the leadership position you seek will be yours.



Further information to help improve your business is contained in "The Business of Filmmaking," a Kodak publication about the business side of planning, producing, and distributing effective motion picture films.

## How to give your films the care they deserve.



Anyone who exposes, processes, stores, handles, projects, or repairs motion picture films will want a copy of "The Book of Film Care," now available from Eastman Kodak Company.

This new publication is the most up-to-date and complete film-care resource currently available from Kodak. Its 125+ pages contain information on film storage and preservation, dye stability, handling and maintaining processed film, theatrical projection, film rejuvenation, and restoration/duplication.

To obtain a copy of "The Book of Film Care" (Publication H-23), write Eastman Kodak Company, Dept. 454, 343 State Street, Rochester, NY 14650. Enclose a check or money order for \$12.95 plus \$2.95 for handling. (Please add state and local taxes, if applicable.)

## Now available: a film that can keep its color for decades.

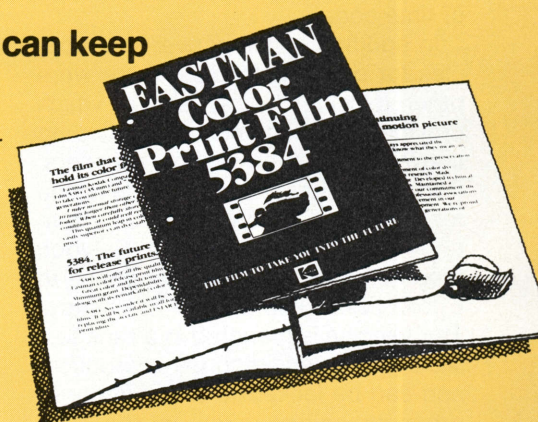
Whatever you do in motion pictures—whether you're involved in producing or distributing—new EASTMAN Color Print Film 5384/7384 (35 mm/16 mm) can help you achieve a longer print life for your life's work.

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# WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE

## REPORT FROM PHOTOKINA

Perhaps the most noticeable trend in the motion picture equipment exhibits at Photokina this year was the development of systems for combining videotape and film editing systems. Every major manufacturer of flatbed film editing consoles was displaying some form of video interface ranging from synchronizing systems to permit film style editing of sound in sync with video picture playback to telecine conversion modules for editing consoles to permit a flatbed to double as a film-to-tape transfer system. Oldelft, the manufacturers of the Cinemonta editing table, set up their display as an experimental workshop using their prototypes in an attempt to get feedback from professionals in the hope of developing a complete system for editing picture and sound with any combination of film and video. Also on display was the versatile Editon system by g.t.c. for interlocking existing equipment by means of time code.

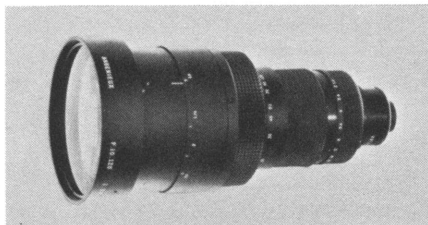
In addition to the conversion modules for editing consoles, there were other telecine devices shown which provide an economic alternative to conventional telecines or scanners. Perfectone has a telecine designed for dubbing studios which uses a continuous movement and a polygon type holoscope to relay the image to a color or black and white TV camera. The telecine is mounted in a rack just like the magnetic recorder-reproducer and can be locked to any number of other machines even in the high speed mode. Another telecine employing a rotating prism is the Scanscope by g.t.c. The Scanscope is designed to provide a low cost alternative to flying spot scanners. It can use a production camera rather than requiring a camera that is dedicated solely to telecine work and since the film transport is continuous and the optical system essentially dissolves from one film frame to the next, the film can run at any speed and still provide an image which can be transmitted or recorded.

Another use of a rotating prism seen at Photokina is the KEM dubbing theater projector which can project a viewable image at high speed forwards and backwards and which

converts from 35mm to 16mm by means of a rotating unit in front of the lamp housing.

## LENSES

Angenieux introduced an improved version of their 12 to 120 zoom for 16mm. It is a T2 lens which is described as having an optical quality constant throughout the image field



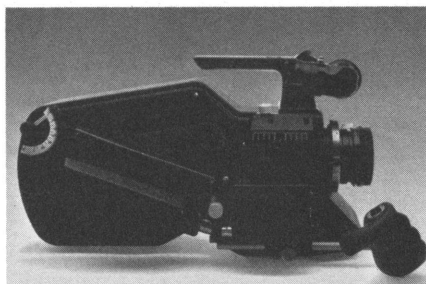
*Angenieux 12—120 zoom*

and limited only by diffraction. It focuses to 1.5 meters and has a front element which does not rotate as it is focused so that polarizing or special effect filters can be mounted directly on the lens.

Moviemcam unveiled a set of lenses designed specifically for the Moviemcam, and Richter Cine Equipment announced that it is marketing the Aspheron converter designed by Francois Laurent, creator of Switar lenses. The Aspheron is a diamond-generated aspheric surface which converts a 10mm Switar lens into a 5.5mm lens with negligible light loss and a resolution in excess of any color film.

## CAMERAS

Aaton introduced the production model of their 35mm camera, the Aaton 8-35 featuring a new displacement type 400 ft. magazine which



*Aaton 35mm camera*

enables the camera to be no bigger overall than the Aaton LTR 16mm camera. The 8-35 has a double motor system with one motor driving the

magazine and the pull down claw and a second motor driving the mirror. The camera weighs 7 Kg (15.4 lbs), will run 10,400 ft. magazines with one on-board battery, and has a sound level of 32 dB with a soft blimp.

Eclair unveiled the Panoram dual format camera which converts from regular 16mm to Super-16mm in a matter of seconds. A single adjustment automatically alters the viewfinder, the aperture gate, and the optical axis. The Panoram also has a spinning mirror reflex system and a variable shutter. A video assist is available as an accessory.

## LIGHTING

The most impressive piece of lighting equipment shown was the remote controlled Kahoudeck manufactured by Quartzcolor Ianiro of Italy and marketed by Rank Strand. The Kahoudeck is a multi-purpose unit which converts from a fresnel spotlight to a softlight by rotating the head around. It uses a twin filament 4-pin base lamp to enable it to have two or three different wattages without alteration of the color temperature. The motorized version shown at Photokina uses small 12 volt motors to pan, tilt, focus and change the mode of the lamp as well as to adjust or rotate the barndoors.

## REMOTE PAN TILT HEAD

Perhaps the most fun of all to experiment with was the remote pan and tilt head developed by Kaleidoscope Cameras for their Snorkel Lens systems and now being marketed separately. It is operated by a set of pan and tilt wheels like those on a geared head, but they are attached to little generators which are connected by cable to stepper motors controlling the actual camera support. The ratio between the movement of the wheels and the movement of the camera is continuously variable over a wide range. Not only does such a tool make possible shots from otherwise inaccessible camera positions, but it represents a major advance in safety for camera operators who no longer need to be exposed to danger just to get a shot from a certain point of view.



Press the shutter release of the Bolex H16 EL and it's instantly at full speed. Release it, and the shut-off is equally quick. The camera's advanced electronic motor drive delivers a new world of shooting precision and editing ease. There's never a "light" frame to cut out. Rock-steady at any speed from 10-50 fps, it delivers absolutely even exposures of every single frame in the animation mode.

The unique, shock proof silicon cell gives you the same kind of instant response in metering: exceptional sensitivity without the memory or blinding you get with other cells. Simply turn the aperture ring, and two illuminated diodes in the viewfinder tell you when you're right on.

Every advanced facility and capability is part of the H16 EL. You can have synchronized sound with your choice of crystal or sync pulse generator. A bayonet lens mount plus optional C-mount adapter mean you can use just about any lens ever made. (Shown here with the exceptional Kern Vario-Switar 12.5 to 100mm multicoated zoom which cuts flare

and reflections down to a minimum.)

With the H16 EL, you needn't worry about running out of power in the middle of a take. Between its standard 0.8 Ah clip-on battery (which drives 600 feet of film) and its optional 1.2 Ah battery (which drives up to 2,000 feet), the most extended shooting durations are amply covered.

A benefit for TV and commercial film crews has been recently added to the H16 EL: a special TV cut-off mask in the viewfinder.

The final word, as with all Bolex cameras, must be quality. The H16 EL's seemingly invincible ruggedness presents a striking contrast to its highly refined, Swiss-crafted precision of detail. A contrast that strikes the ideal balance between reliability and excellence. Matched to a price that makes sense to the profit-conscious working professional.

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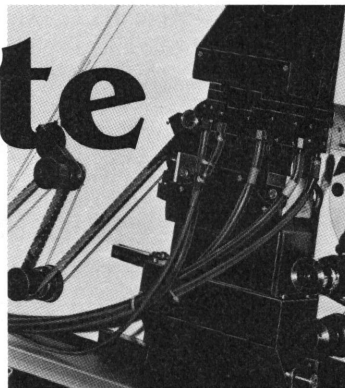


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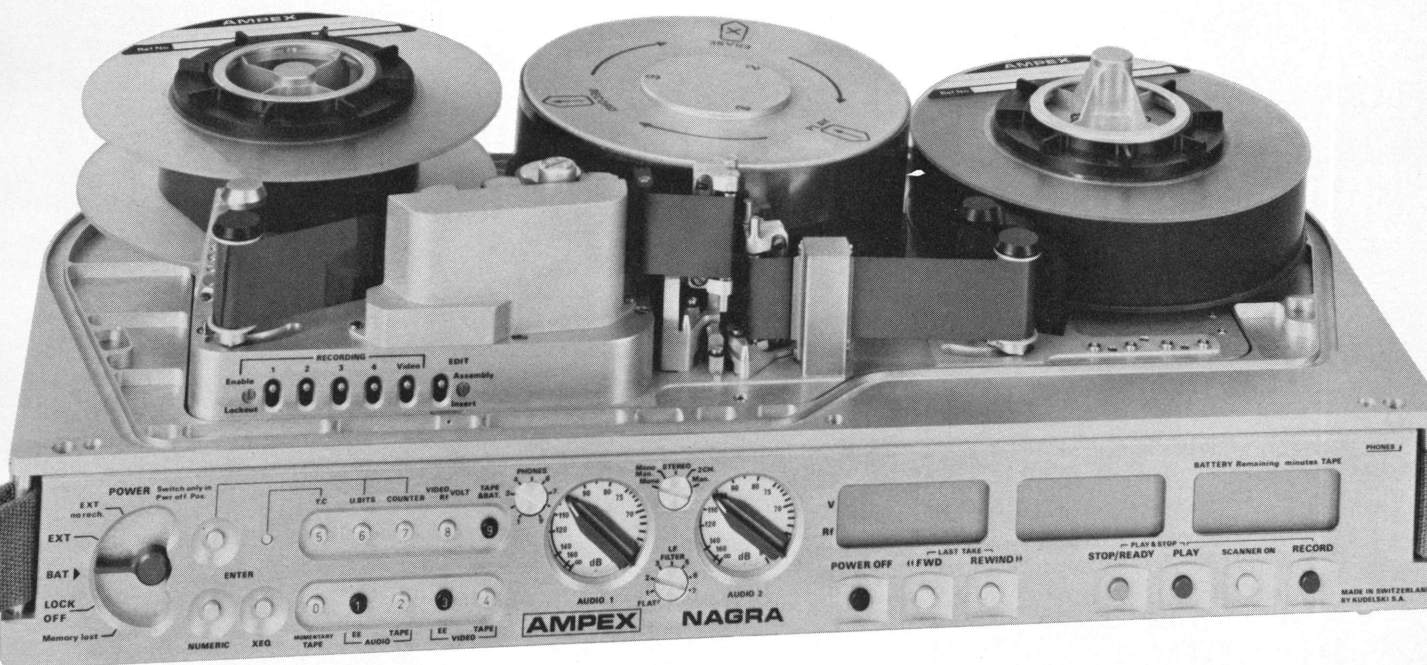
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# THE AMPEX NAGRA VPR-5

## World's Lightest 1" Videotape Recorder



### Product Report

Stefan Kudelski, who designed the 1/4" tape recorder which revolutionized sound recording in the film industry, recently turned his attention to the 1" video recorder. With the help of Ampex his company has produced the Ampex Nagra VPR-5, a 1" portable VTR which weighs less than 15 pounds and is 17 1/2" x 8 1/2" x 5 1/2". Its controls resemble those of the Nagra 4" recorder and it is constructed entirely out of an aluminum alloy. (A plastic cover designed for the first prototype has been replaced by a metal one in order to more evenly distribute the heat.)

The VPR-5 is designed to operate with 5 1/2" reels with its cover closed or can accept conventional 60 minute reels with extenders on the spindles and the cover off. A 5 1/2" reel will record 20 minutes of material. The performance specifications of the VPR-5 are virtually identical with those of the Ampex VPR-20, a port-

able 1" recorder which weighs over 3 1/2 times as much as the VPR-5. The VPR-5 is capable of assembly or insert editing and there are a variety of sophisticated editing control functions which can be remotely controlled. It will operate at anywhere from -10°C to +45°C and is designed to be operated while suspended from the operator's shoulder.

Needless to say the audio specs are as good as any 1" VTR although Kudelski is quick to point out that the only way to get superior sound for a video production is with double system sound recording. To this end he has designed a time code system to enable the VPR-5 to be synchronized with a Nagra IV 1/4" sound recorder.

The battery capacity for the VPR-5 is one hour and there is an accessory quick charge power system which can recharge up to six batteries in less than five hours and serves as an AC power adapter as well.





Elizabeth,  
you cut and edited  
the first film shot  
entirely with the  
Aaton Clear Time  
Recording system (early  
1982 in Piparsod  
Madyapradesh, India).

It took you nine days,  
and you enjoyed it.

Below, your remarks :

समयांकन अबूक स्पष्टता  
से हुआ है : इस बात से  
फिल्म खींचने संबंध में

सूचनाओं की  
से मैं समझता  
की जटिल



For those readers who do not unders





, please turn page.

photo JPB

अधिक प्रचुरता  
वता - स्थापन  
स्थाओं से

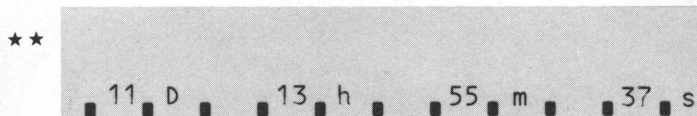
निर्बाध रहकर पूर्ण रूप  
से फिल्म - कार्य में अपना  
समय लगा पाया ।



**Elizabeth Kapnist** cut and edited the first film shot entirely with the Aäton Clear Time Recording system (early 1982 in Piparsod Madyapradesh, India). In took her nine days, and she enjoyed it.

On preceeding page, her comments in Hindi ; this page in English.

**1st day :** I choose a roll of the film at random\* and put it on the editing table ; I line up the printed fullcoat.\*\* Victory : they're perfectly in sync. The clear marking system works.



**2nd day :** As I have only a few days to edit in, I decide not to make up sync rolls, but simply to put a sync sign at the beginning of each take. Saeed Mirza translates the Hindi into English.

**3rd day :** Going through the rushes, my selections are all classified by date and time. In no time, I can put my hands on the trim I'm looking for.

**4th day :** I used to feel like a library attendant : now I feel blithe. Work on the very structure of the film is fast and easy. Image and sound track can be manipulated ad infinitum : I know I'll always land on my feet, in sync.

**5th to 8th days :** More and more, I focus my work around the time address on the film edge : there's no way I can put the take of the woman at the well at 6:20 p.m. into a morning sequence.

**In short, contrary to rubber numbering, clear time marking provides absolute accuracy ; it contains much more information about the actual making of the film. This allowed me to direct my attention away from the time consuming and relatively stultifying task of finding sync, and devote myself entirely to the much more gratifying business of constructing the film.**

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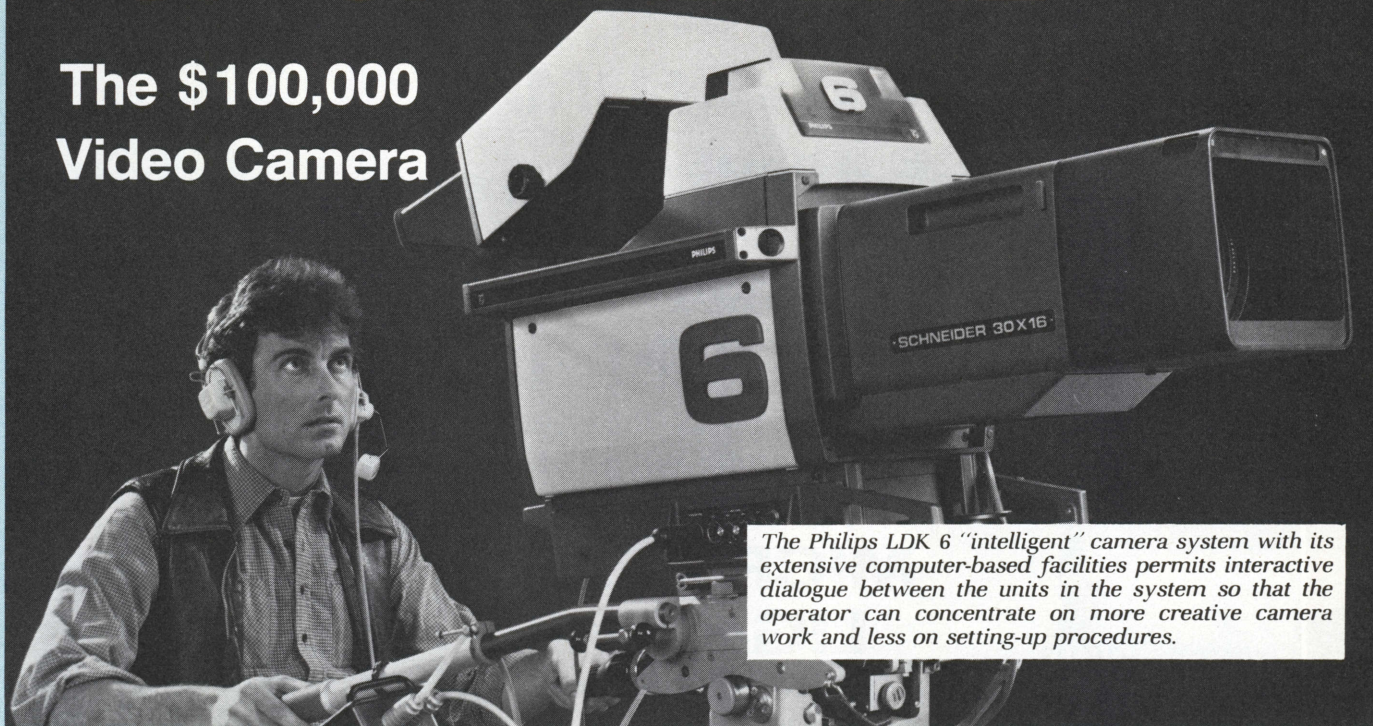
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# TOP OF THE LINE

## The \$100,000 Video Camera



*The Philips LDK 6 "intelligent" camera system with its extensive computer-based facilities permits interactive dialogue between the units in the system so that the operator can concentrate on more creative camera work and less on setting-up procedures.*

by DAVID WEINER

*"Seeing by wireless—Inventor of apparatus wishes to hear from someone who will assist (not financially) in making working model. Write to Box S. 686; The Times, E.C.4"*

The above advertisement appeared in the June 26th, 1923 classified section of the London Times. It was placed by John Logie Baird, who demonstrated the first television camera in his tiny attic apartment three years later.

Over the next fifty-nine years, the frequency of equipment demonstrations and the cost of the devices presented reached levels which would have astounded the early tinkers. A modern, top-of-the-line TV camera now costs about 100,000 dollars, including the lens and pick-up tubes. The research and development for such a camera can take five years, more than twice the duration and cost of the preparatory work for EFP and ENG cameras. The digital electronics, diagnostic and miniaturized computer systems account for a large part of the price. There is also an inescapable economic law which forces up the price tag: camera manufacturers don't sell as many expensive cameras as they do cheaper models. To make up for this lack of volume sales

the price must be accordingly higher.

Let's examine the capabilities and applications of the video camera using a new product, the Philips LDK-6, as our example. With its viewfinder and handgrips it is about 26 inches long by 17 inches wide by 21 inches high. It was primarily designed for outdoor, multi-camera setups where long cable runs are required, such as major sports events from football to the Olympics. For this reason, it has been fully rainproofed. The LDK-6 can also be used in studio multi-camera applications and in film-style video field productions when a single high-quality camera is required.

The size of the LDK-6 is the result of several engineering considerations. The camera had to be strong enough to bear the weight of the forty-pound lenses used for outdoor sports broadcasts, so a substantial frame was needed. When used in the studio the 30mm pick-up tubes are installed because their resolution characteristics are excellent. The 30mm tubes take up more room inside the camera than do the 25mm tubes used for field production. Finally, the engineering staff was not forced to husband every millimeter of space within the camera as they often are when designing an ENG camera.

Because there are fewer space limitations the integrated circuit chips can be spread out on the PC boards, making them easier to reach and allowing them to be socket-mounted rather than soldered directly onto the board.

Size is only one of the features differentiating the LDK-6 from EFP and ENG cameras. A comparable field production camera from the Philips Corporation, the LDK-14, costs about \$50,000, half the price of the LDK-6. Unlike the 100,000-dollar camera, the LDK-14 can be hand-held and its set-up procedures are carried out manually, by adjusting potentiometers. Diagnostic circuitry is limited or lacking which means that the EFP camera cannot search out or analyze its own electronic ills.

Miniaturized computers, four of which are incorporated into the LDK-6 system, are not part of the LDK-14's design. The field camera resolves 600 lines compared to the LDK-6's 800 lines. A 600-line original is fine for one-time broadcasts but when postproduction will involve the recording of many generations, 800 lines of resolution will insure that the ultimate image quality is superior to that which could be achieved with a 600-line original.

The tube of the EFP camera is  $\frac{2}{3}$



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inch in diameter, one reason its resolution is not equal to that of the LDK-6. The 3/8-inch tube has been the subject of considerable research over the past few years and the image it produced is now good enough for commercials and other EFP production.

The camera using a 3/8-inch tube must be able to deliver an acceptable image in low-light. Low-light illumination tends to accentuate video noise and to minimize this the response of the red and blue channels (which are the noisiest) are limited. This reduces the noise in dimly-lit scenes but it also cuts down resolution. Red/blue channel limiting would not be done with studio cameras because the chroma key process depends on full output from the blue channel. If the blue channel were to be suppressed, visible faults would appear at the edges of the chroma key.

The differences between the ENG camera and the LDK-6 are quite pronounced. ENG cameras fall into the 13,000 dollar price range and have no automatic set-up systems, diagnostic circuitry or internal computers. They yield images which are acceptable for live coverage or for a limited number of tape broadcasts. The signal-to-noise ratio and resolution cannot approach that of the LDK-6 and the electronics are less sophisticated. The linear matrix circuit, present in the studio and field production cameras, is not present in the news camera. This circuit ensures that the colors of a scene are rendered with extreme precision. When using a single camera this is not terribly important, but in multicamera productions it is imperative that the color values remain constant when cutting to different positions.

Television stations are loath to spend large sums of money on their ENG cameras because crews will toss them into car trunks and mistreat them in hundreds of other ways. The management often finds it advantageous simply to depreciate the value of the news camera and, instead of spending \$40,000, on a single LDK-14, they prefer to use the same money to buy three ENG cameras in succession. The 40,000-dollar camera produces images good enough to be used in commercials; the news staff has little need for video of this quality.

The "throw-away ENG" concept has been widely accepted at TV stations and manufacturers are busily

supplying \$13,000 "disposable" cameras. Short cuts are taken with the circuitry, as well as with the camera bodies, which are usually made of aluminum, rather than cast magnesium.

ENG and field production cameras often function as independent units, unlike the LDK-6 and other high-end cameras which require ancillary equipment in the control room or camera van. This is another reason for the \$100,000 price. These rack-mounted devices are the Remote Control Panel (RCP), the Master Control Panel (MCP), the Camera Processing Unit (CPU) and the Common Control Panel (CCP). The LDK-6 is always linked to an RCP, a CPU and an MCP. In the simplest configuration where a single camera is used, the CCP might be omitted. This arrangement, however, would be rare. The LDK-6 is a system which is intended to meet the needs of elaborate, large-scale outdoor production. Only then can the fullest use be made of its capabilities.

There are four miniaturized computers in the system, one each in the camera head, the MCP, and CCP and the CPU. These computers carry out set-up procedures, troubleshooting tests and automatic monitoring of the status and performance of the camera. They also store information about gain levels, iris, back focus and other settings. Because the LDK-6 will be frequently used at sports events, the camera head computer can retain set-up parameters for four separate lenses. This is useful because the sports production crew is assigned to a variety of events and must often use a different lens for each kind of game. Thus, the settings for the "football" lens can be stored and recalled, as well as settings for the "golf" lens, the "baseball" lens and the "skiing" lens, just to name four examples.

The Camera Processing Unit (CPU) supplies power to the camera within precise tolerances of voltage and frequency and it provides the access point for the red, blue and green outputs. The Remote Control Panel (RCP) is simply a box of potentiometers used to adjust the iris, black level and the gains of red, blue and green.

For multicamera productions, all four units (CPU, RCP, CCP, and MCP) are used. The MCP, operated by the Video Technician, can carry out any function of the CCP and RCP, such as RGB gain, black level and iris adjust-

ments. The MCP can also access the computer files, controlling several hundred operating parameters and automatic routines. For example, to change the vertical linearity of camera four, the MCP would be assigned to that particular camera and then the computer file pertaining to linearity would be accessed. The adjustment would be made by pressing the appropriate digipot.

Diagnostic and set-up routines can be executed from the MCP, which also displays warnings and information about camera functions on six alphanumeric readouts. Full or partial set-up routines can be run. In the partial mode, a single function is selected (such as registration) and the software will carry out that one task. The full set-up routine directs the computer to execute all the steps of the set up.

The layout of the MCP panel is something like a push-button instruction manual, guiding the video technician through the set-up procedure. Once made, the settings are stored in the camera head computer, where they will be retained even if the power is cut off. A small, internal battery supplies current keeping the memory intact. Power can be restored days later and the specifications can be recalled.

The MCP is the most powerful control and analysis device in the LDK-6 system; it is manned by the video technician because it is his responsibility to attend to the complex technical aspects of the camera's performance. The adjustments carried out by the MCP take a few minutes and must be made when the camera is off the air.

The Common Control Panel (CCP) is the position of the Senior Video Operator. This device does not control as many functions as the MCP and is used to make relatively quick, "mid-course," corrections, usually during commercial breaks. It can switch cameras from stand-by to operational modes, trigger automatic procedures and display some information, such as F-stop settings. The contour amplitude, iris and gain of red, blue and green can be adjusted at the CCP. The red and blue values become critical when telecasting a scene lit by changing sunlight because they must be altered as the Kelvin temperature of daylight fluctuates. Like the MCP, the CCP has an internal computer communicating with the other computers in the sys-



# Eclair

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# PANORAM



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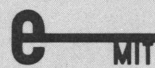
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tem, monitoring and analyzing various aspects of the LDK-6's performance.

The camera operator has his own control panel at the back of the LDK-6. This panel can be used to adjust filter wheels, iris and white balance.

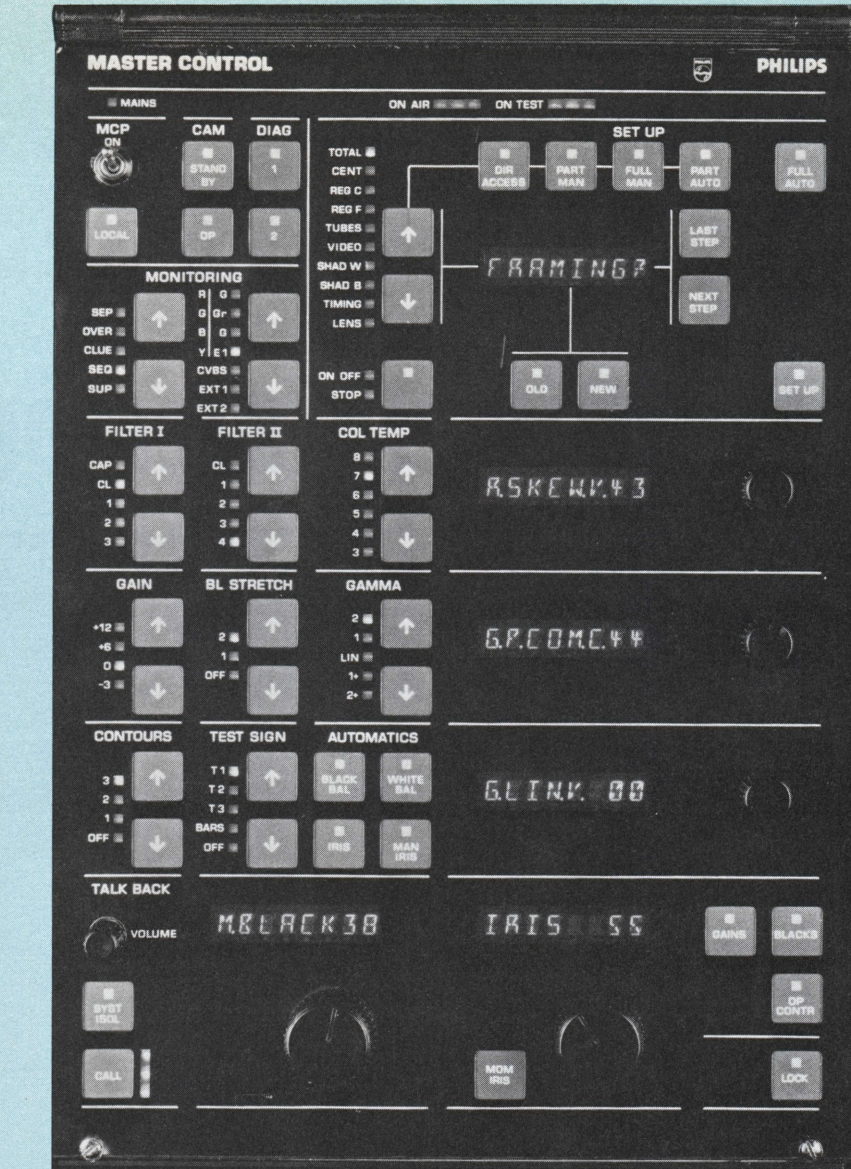
The number of personnel required by the LDK-6 will depend on the configuration of the system. In the usual, multicamera arrangement, three people will be needed: the Video Technician (MCP), the Senior Video Operator (CCP) and the Camera Operator (Camera Head). In those rare cases where a single camera is used, and the CCP is not, only two people would be necessary; the camera operator and the video technician to monitor and operate the MCP and the RCP.

Each time the camera is powered up, its internal computer runs a self-test; when this is completed the operator may opt to allow the computer to do the entire set-up procedure. The LDK-6 is fully automated and once these automatic systems are activated, the task of the control room crew almost becomes a matter of watching for, and acting on, warnings and comments from the computers.

The troubleshooting programs, called diagnostics, are divided into two types, on-line and off-line. The latter continuously monitors the operation of the camera and will alert the cameraman to potential problems, such as a dangerous rise in temperature which threatens the electronics. The on-line system constitutes something of an electronic maintenance schedule, as well. For example, the beam current demand of a pick-up tube increases with time and this gradual rise is monitored by the camera's computer. When the beam current reaches a certain level a warning will appear on the operator's panel telling him that the tube will need to be replaced in the near future. This forewarning system reduces downtime considerably. The on-line diagnostics cannot take the camera off the air; that decision is left to the judgment of human beings.

The off-line diagnostics examine the electronics of the camera in minute detail, troubleshooting the circuitry board by board and displaying the problems when discovered. This off-line checkout can be made even after the camera has failed.

The camera cable, too, is undergoing modifications making handling



*The Master Control Panel for the Philips LDK 6 camera system acts as the surveillance center for the whole computer-controlled system.*

easier. Long runs of multiconductor weigh hundreds of pounds and cost thousands of dollars. This bundle of wires terminates in a bristle of delicate connectors which can loosen and break. A different type of cable, called triax, is one-fifth the weight and cost of conventional cable and it has far fewer connectors. Triax was developed about ten years ago and is now widely accepted for network sports broadcasts. It consists of a central conductor surrounded by two concentric shields and, thanks to its financial and handling advantages, it is now seeing some use in studios. Instead of conducting the video at one volt, triax transmits this signal after it has been converted to RF and modulated onto an AM carrier frequency. Triax contains six audio channels and a power line, which

terminates at the camera head and is used to run a teleprompter. Another kind of triax can bring 1 Kw of AC to the camera and this "power triax" has been used by ABC during cold weather productions to energize a heating unit, keeping the lens free from frost.

With computers and digital electronics at their fingertips, the modern cameraman might be inclined to see John Logie Baird's creation as a laughable contraption, cobbled together out of pie tins and selenium cells. Let's not sell Baird short; his device stands as one of the cheapest great inventions of the twentieth century. Most new designs cost an arm and a leg to reduce to prototype form. The first television camera cost just about as much as it weighed, well under ten pounds.



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# 3-D TELEVISION

By **DANIEL SYMMES**

*Institute of Stereoscopic Research*

On December 19, 1980, television history was made. A Los Angeles-based pay TV system transmitted the world's first commercial 3D program. Since then, more than fifty million people have seen 3D TV broadcasts.

3D TV has existed for thirty years but "commercial" and/or "full screen" better describe the current phenomenon. The first public 3D broadcast (vs. closed circuit) was on April 29, 1953, over ABC's Los Angeles affiliate KECA (now KABC), Channel 7. Home viewers saw blurred, slightly-flickering images, while an audience at the 31st Convention of the National Association of Radio and Television Broadcasters saw 3D—crude, but 3D.

A conventional camera was adapted with a rotating mirror, producing alternating fields of left and right eye images. At the receiving end, dual projectors with appropriate polarizing filters projected the images on the screen with "decoding" by polarized glasses worn by viewers.

The program was part film, part live, the filmed portion being the prologue from *BWANA DEVIL*, featuring Lloyd Nolan, and the live portion a scene from the then-popular series, *SPACE PATROL*. Unfortunately, the projectors' filters were inadvertently reversed, so the V.I.P. NARTB audience had to wear their glasses upside down to successfully view the experiment. Press response was less than overwhelming although by the third broadcast (under FCC Special Broadcast Authority), sometime later, quality had improved.

About three years earlier, the Argonne National Laboratory in Chicago, under the guidance of Dr. Harvard L. Hull, had developed a

closed circuit 3D TV system. The primary use for the system was the remote handling of radioactive materials. A conventional camera was adapted with twin lenses which, on a normal monitor, produced the left and right "stereo pair" side by side on the screen. The spectator wore wedge prism glasses to fuse the two images into one. While it was a bit uncomfortable on the eyes, it worked.

In 1923, Laurens Hammond (of Hammond Organ fame) had devised a film system where the stereo pair were projected in alternate-frame style (left-right-left, etc.). A special mechanical viewing device, synchronized with the projectors, alternately blocked the spectator's right and left eyes (Fig. 3). The effect worked, but with constant flicker and a lot of noise. Dr. U.A. Sanabria, of American Television in Chicago, adopted the technique in 1953 and gave closed circuit demonstrations; however, the drawbacks of the Hammond system plagued Sanabria and nothing further was heard from his system.

In 1954, James F. Butterfield broadcast television shows in Mexico using an Argonne-style system. Using the pseudonym "Jaime del Campo," Butterfield made and distributed a "stereo visor" for viewing his programs. Composed of a housing with small mirrors, the visor was held onto the spectator's face with an elastic band. The broadcasts ran for about a year on a semi-regular basis.

3D TV quietly subsided with the decline of 3D theatrical films in the Fifties and the introduction of color television in 1954.

In 1980, after several successful 3D film projects, film producer John

Lamb and I began to experiment with anaglyphic 3D TV. The anaglyph ("relief picture") system involves coloring the stereo pair red and blue (or green) and superimposing them. "Decoding" is achieved by glasses with a red and a blue lens. (Anaglyphs were popular in the Twenties and Thirties and in 3D comic books in the Fifties.) At the same time, Jimmie D. Songer was experimenting with the anaglyph method at his Hollywood video facility, Studio Television Services (STS).

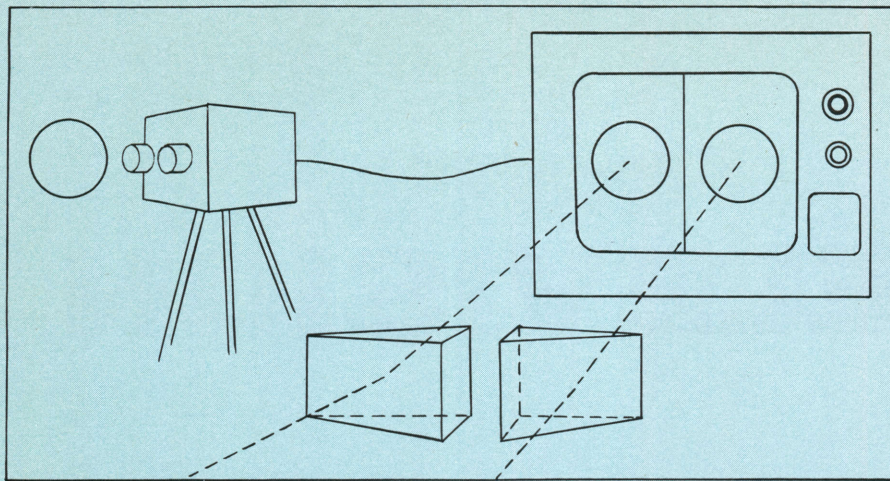
While I was working with James Butterfield on a different project, we heard of the STS (Songer) work and were able to get a 1/2" VHS copy of a test of Warner Brothers' *DIAL M FOR MURDER*. The quality was poor but the 3D was there. Butterfield and I looked at each other and questioned, "Will it fly?"

Shortly after, MCA/Universal contacted us, asking if we could make 3D TV glasses for two cassettes they were putting out, using the STS system. We said yes.

Songer invited us over to STS to view a "live" demo using a print of Universal's *CREATURE FROM THE BLACK LAGOON*. The effect was much better on the professional equipment, although it still exhibited problems. Universal gave the go-ahead for video transfers of *CREATURE* and *IT CAME FROM OUTER SPACE*.

Butterfield asked if the process could be improved and I replied that I thought it could. He called in a video engineer he had previously worked with, Stanton "Bud" Alger. Jim showed Bud the demo of the STS process and again asked if we could do better. Bud's reply was, "Probably so."





*In the closed circuit 3-D TV system, a modified camera produces the left and right stereo pair on a normal monitor screen and the image is viewed through wedge prism glasses.*

Bud and I proceeded to work on the two basic stages of a 3D transfer: film to tape and tape to 3D tape. My primary contributions were in stage one, with guidance in stage two, which was solely developed by Bud.

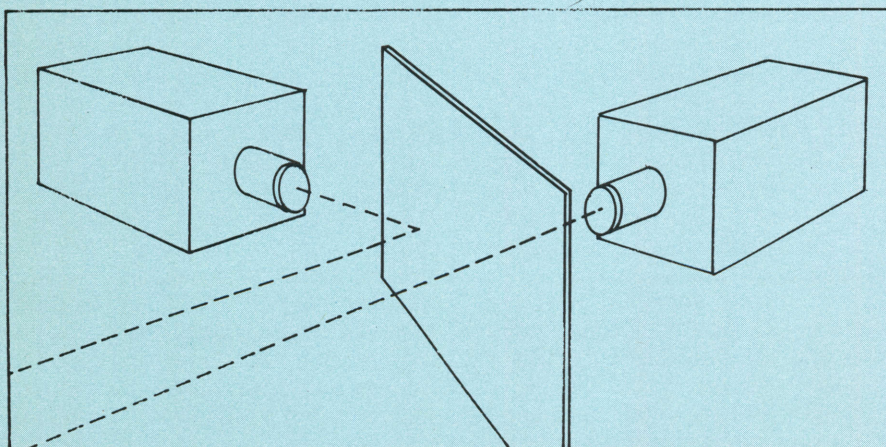
Butterfield busied himself securing financing and at the same time scoured the country for a maker of 3D glasses who could deliver 100,000 pair (some to be packaged with the cassettes) and be ready to market for Halloween—a two and a half week time limit! No luck. He presented the problem to me, whereupon I remembered the company that had made glasses for the April 1974 3D issue of *AMERICAN CINEMATOGRAPHER*.

To shorten a long story, we deliv-

ered the glasses in time and everyone was happy until, about mid-October, MCA actually looked at the 3D tapes that were already on sale. Not having the technical vocabulary to describe their negative response to the quality of the 3D, MCA quietly recalled the cassettes. Butterfield and I were contacted and asked for our opinions. In all honesty, we could say nothing good about the tapes.

At this time, Jack Fishman, assistant to William Mechanic, Head of Programming for SelectTV, came to us for two things: first, to make the glasses for a special Halloween broadcast of a Three Stooges short which SelectTV had just had STS transfer to 3D tape (the original was

*In a configuration popularized by the late 3-D pioneer Floyd Ramsdell, the two cameras are placed at 90° with a half-silvered mirror between them. One camera sees through the mirror while the other sees a reflected image. This allows for very flexible interaxial (lens separation).*



shot in 3D) and, second, to question the quality of the transfer. We viewed the tape with him and pointed out the problems. Asked if we could do better, we informed him that we were close to completion of our own process.

Bill Mechanic gave the green light and we transferred *SPOOKS* again, this time in our 3D VIDEO® process.

The basic problem encountered with the STS process was registration: the stereo pair must be properly superimposed with vertical and horizontal corrections being required on a shot by shot basis. Bud and I worked on various methods to accomplish these adjustments.

Based on our results, Mechanic had his assistant work with us in doing a feature, *MISS SADIE THOMPSON*. Because of the time involved, the Halloween broadcast was cancelled.

When the feature was completed, 100,000 3D TV glasses were made and distributed through Sears stores throughout Los Angeles.

On December 19, 1980, *MISS SADIE THOMPSON* and *SPOOKS* received a 31.6% share compared to a 40–50% share for a major new film. Not bad for a program almost thirty years old.

SelectTV immediately acquired rights to United Artists' *BWANA DEVIL*, although a 3D print was not available. Knowing the producer-director, Arch Oboler, I arranged to transfer his personal print, which had not been shown since 1953!

*BWANA DEVIL* and another Three Stooges short, *PARDON MY BACKFIRE*, were shown by SelectTV on January 20, 1981 and collected a 34.9% share. 3D TV was on its way.

On April 28, 1981, Bud Alger and I made the big breakthrough—*color*. Until then, the colors of the film were electronically removed, leaving, ostensibly, a black and white image with slight color (red and cyan) fringing. To our surprise, a color anaglyph looks very good color-wise (without glasses) and the color fringing is far less noticable, as it gets "lost" in the color of the picture itself. Unfortunately, when viewed through 3D glasses, the color is "squashed," though one can still tell what is green, blue and yellow. Red is almost totally lost.

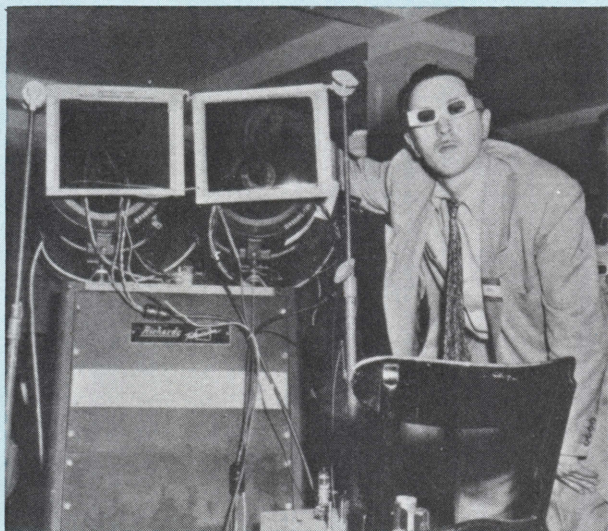
Bill Mechanic got with MGM and, almost before we knew it, we had transferred *KISS ME KATE* in full color. As an added feature, it also



boasted a stereo soundtrack. Upon viewing, KATE looked too flat for effective 3D TV. It was shot too conservatively for 3D effects, which worked fine in theaters; but it must be remembered that in a theater the image is magnified up to 500 times, while on TV it is magnified as little as 20 times. Reduced picture size = reduced depth.

In the summer of 1980, I had built the first 3D VIDEO® camera, based on the "L" configuration popularized by Floyd Ramsdell in the 1940's. It was black and white and worked quite well.

Around May of 1981, Bud and I assembled the first color camera rig and shot some tests. Some of the tests were shown at the 1982 Con-



*At ABC's 1953 test, two video projectors with polarizing filters projected the 3D TV images on a screen.*

sumer Electronics Show in Las Vegas. Then we were contacted by WGNO, a small UHF station in New Orleans. We had recently transferred Universal's REVENGE OF THE CREATURE and they were intent on showing it.

This brought up a problem. On subscription/pay TV, the FCC could not care less about what is shown, image-wise, but on "free TV," they do. Jim Butterfield knew an important person in the FCC so, armed with a sample tape and with Bud, he ventured to Washington.

The result was better than we expected. As far as the FCC was concerned, as long as the video sync and reference signals were "normal," they did not care about image quality, saying, in effect, it's up to the local station to control *what* it broadcasts. They merely suggested proper indication to home viewers that what they were watching was in 3D. "They said it couldn't be done"—but we did it

and it was easier than expected. We received full FCC approval.

On February 9, 1982, WGNO broadcast the first FCC-approved "free" TV broadcast.

Local response was overwhelming. Initially, only 100,000 glasses were ordered but, one week before the showing, an additional 240,000 were hurriedly made, falling perhaps 400,000 or more short of the actual demand.

It was Sweeps Week. The big winner was WGNO, with its 25-year-old movie, which brought in a 40% share!!

Paramount Television contacted us in March to shoot half of an episode of MORK AND MINDY as a test. Using a Dimension 3® dual Panaflex

camera rig, we produced left and right eye film prints which were then transferred to tape. Only one of the prints was edited into the balance of the episode and it was aired in 2D without anyone knowing the difference.

In May, 1982, KTZO, San Francisco, contacted us and wanted to actually do live segments during the showing of a 3D film. We flew from Los Angeles and made history again with the first *live color* 3D TV broadcast. During the show, the host "tickled" the audience with a peacock feather. So enthused was one member of the television audience that, as Bud and I were leaving the studio, we received a note containing a piece of a feather. It read: "... we are returning the end of the feather you stuck through our TV screen. It was so real that we cut the end off."

On May 12, we set up at KHJ, Los Angeles, to tape Horror Hostess Elvira in 3D for a broadcast of Columbia's MAD MAGICIAN. Technical in-

terfacing problems with the station's equipment degraded image quality and color but home viewer response still has the station smiling. Over 2½ million glasses were sold in Los Angeles.

To date, the following titles have been transferred by 3D VIDEO®:

SPOOKS (Col. 1954; b/w)

MISS SADIE THOMPSON (Col. 1953; color)

PARDON MY BACKFIRE (Col. 1953; b/w)

BWANA DEVIL (UA 1952; color)

REVENGE OF THE CREATURE (UI 1955; b/w)

KISS ME KATE (MGM 1953; color)

AROUND IS AROUND (Ind. 1951; color)

NOW IS THE TIME (Ind. 1951; color)

AUDIOSCOPIKS (MGM 1936; b/w)

THIRD DIMENSIONAL MURDER (MGM 1941; b/w)

GORILLA AT LARGE (20th 1953; color)

INFERNO (20th 1953; color)

MAD MAGICIAN (Col. 1954; b/w)

COMIN' AT YA (Filmways 1981; color)

DYNASTY (Ind. 1977; color)

THE MASK (Ind. 1960; b/w)

With tests for:

JIVARO (Par. 1954; color)

LOST TREASURE OF THE FOUR CROWNS (Ind. 1982; color)

Most recently, the producers of FANTASY ISLAND suggested filming a test of a scene from their show, with considerable interest in doing a whole show in 3D. Look for the possibility of the Rose Parade in 3D next New Year's Day. There may even be "scratch and sniff" rose-scented glasses!

With over 50 million 3D glasses sold, a large portion of the population of the United States has seen 3D VIDEO®'s idea of 3D TV.

Foreign interest is increasing. Experimental broadcasts in Germany last year were technically unsuccessful but generated considerable public response. An artificial (simulated) 3D process was viewed in Japan a few years back—again, enthusiasm—but for *real* 3D!

Polarized 3D TV and 3D TV without glasses are possible now but only with special TV sets, cameras and/or transmitters. In the meantime, anaglyph TV works well at times and, with new programming (using 3D TV cameras), 3D may become an occasional "Special Event," like stereo simulcasts. ■



# CREATING THE NIGHT



Stanley Cortez, current vice president of the American Society of Cinematographers, is one of the screen's recognized pictorial stylists. His penchant for creating unusual, striking film images has enhanced the work of such directors as Claud Lelouch, Fritz Lang, Julien Duvivier, Orson Welles, John Guillermin, Sam Fuller, John Huston Johnson.

He began his career as a salon photographer in his native New York City, working with Edward Steichen, Pierre MacDonald, Bachrach's, Walter Scott Shinn and others. His first motion picture assignment was as a still photographer on the Pathe serial, *THE GREEN ARCHER*. After working at Paramount's Long Island Studio, he came to the West Coast with his older brother, film star Ricardo Cortez.

He worked at all the major studios, first as assistant and later as operative cameraman to such top cinematographers as Arthur Miller, Hal Mohr, Karl Struss, George Barnes, Charles Rosher, Alvin Wyckoff and Ray June. He became a director of photography at Universal at the age of 27. For six years he specialized in filming mystery and action pictures made on 12-day shooting schedules, then was promoted to the spectacular *EAGLE SQUADRON*. His imaginative lighting on the earlier *THE LAST EXPRESS* and *THE BLACK CAT* prompted Orson Welles to request Cortez for his monumental *THE MAGNIFICENT AMBERSONS*. After *FLESH AND FANTASY*, he signed a four-year personal contract with David O. Selznick.

His work on Selznick's *SINCE YOU WENT AWAY* was interrupted when he became a member of the Army Pictorial Service, U.S. Signal Corps. He worked with Frank Capra on the *WHY WE FIGHT* series, with John Huston on *LET THERE BE LIGHT*, and covered the Yalta and Quebec conferences before returning to civilian life. His many post-war films include *SMASH UP*, *THE SECRET BEYOND THE DOOR*, *BLACK TUESDAY*, *THE THREE FACES OF EVE* and *SHOCK CORRIDOR*.

Cortez has received acclaim for his imaginative use of color. *BACK STREET*, *BLUE*, *THE BRIDGE AT REMAGEN* and *ANOTHER MAN, ANOTHER CHANCE* are among his most notable color films.

He received Academy nominations for *THE MAGNIFICENT AMBERSONS*, *SINCE YOU WENT AWAY* and *SMASH UP*; won the Film Critics of America award for *AMBERSONS*, and was the first American to receive the Gold Award of the Societe Francaise de l'Industrie Cinematographique (for *THE MAN ON THE EIFFEL TOWER*). He has written for Encyclopaedia Britannica.

by GEORGE E. TURNER

"So, you are the new cinematographer to solve our complex photographic problems? Well, I am very happy to meet you, you big bastard."

These were Charles Laughton's first words to Stanley Cortez, ASC when they met for the first time at the Hotel George V in Paris. Cortez responded:

"I am very happy to meet you, you fat S.O.B."

With this dialogue, accompanied by warm, friendly handshakes and feelings of mutual respect, began a relationship of many years which culminated in the making of Laughton's only film directorial effort, the classic *THE NIGHT OF THE HUNTER*. Laughton's untimely death left an unfilled void in the worlds of theater, film and literature. He was, as

Cortez observes, "a brilliant, sensitive artist; a source of inspiration."

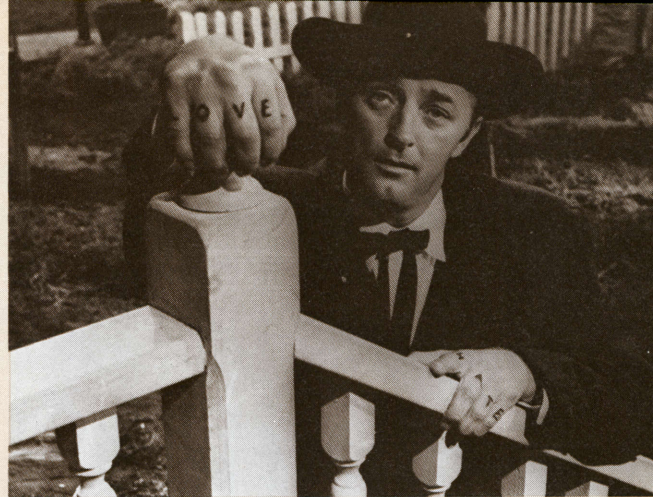
The occasion was a cocktail party in honor of Cortez, who had just arrived from the States to take over the photography of *THE MAN ON THE EIFFEL TOWER*. Production had foundered due to photographic problems. According to Cortez, "It was a strange project, put together by Franchot Tone and Irving Allen and shot on Ansco Color, a reversal process. Tone directed part of it, but when he was in a scene Charles would take over, and when both Charles and Franchot were in a scene Burgess Meredith would direct. When all three were in the scene nobody was left but yours truly, so I directed.

"Dissolving to when the picture finished, everybody left Paris to catch a ship, leaving Charles and me behind to

Robert Mitchum threatens Sally Jane Bruce as Billy Chapin watches.







do the finishing sequences. That's when I got to thinking that Charles would make a good director. I saw Paris through his eyes, all of Paris, and he knew Paris better than most Frenchmen."

About six years later, producer Paul Gregory put together a package for United Artists to film Davis Grubb's

*Stanley Cortez, ASC.*

novel, *THE NIGHT OF THE HUNTER*, with Laughton as director. The team had worked together on a producer-director basis on several successful plays. Laughton invited Cortez to his home in the Hollywood Hills. Gregory was there as was James Agee, who was writing the screenplay.

"The meeting took place at the pool," Cortez recalls. After the story was discussed, Cortez said, "Charles, as this is

your first picture, I'm going to bring some equipment up here and I want you to study it and get yourself accustomed to the different lenses, what they'll do, and so on. Not that you should be totally absorbed, but just to know what is going on when we get you with the crew." He brought the equipment to the house on the following Sunday.

"I became the student and Charles







Charles Laughton.

became the professor," Cortez says. "Not from a technical viewpoint, but from a philosophical point of view, his thoughts and feelings from an actor's point of view and a writer's—because he was also a very fine writer. He had a great cultural sense, a sense of good taste.

"The picture was to have been made for a certain amount of money and in a certain period of time. He assembled a wonderful cast and we made the picture in 36 days. That same picture today would have taken—I don't know how long, but let's say more than double.

"When a cinematographer says a certain picture is close to his heart, it's because of the fun he had doing it and in this case the tremendous *sympatico*—not a phoney veneer, but truly a *sympatico*—that existed between Charles Laughton and myself. Notwithstanding the others who contribute so much to a production, on the firing line, when all the chips are down,

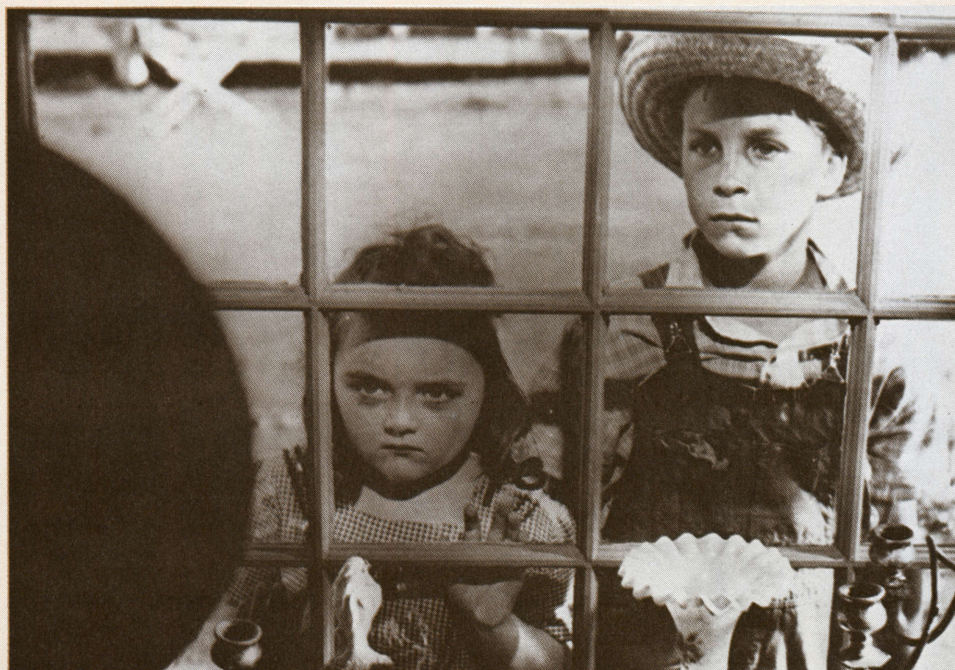
there are two people involved: the director and the cinematographer. It was a field day for me in terms of extreme creativity that Charles appreciated.

"For this picture, a group got together every night over a couple of drinks at a restaurant down on La Cienega, the Frascatti Inn. It consisted of Charles, Hilly Brown (the art director), Milt Carter (the assistant director), Bob Golden (the film editor), and sometimes Ruby Rosenberg (the production manager). The purpose of this was to sit down with Charles to help him make a great picture. Which is what it became, but it was 'way ahead of its time.'

"In this picture I was very careful in selecting a crew. I wanted to have people in there who would have the chemistry to support Laughton—not to excite him, but to give him a boost and not create a bad situation because of Charles' lack of technical knowledge. I was there to protect Charles, and if I wasn't there my boys knew how far they could go. It proved that my choice of people was excellent and they—Bud Mautino, Sy Hoffberg and Bob Hauser—supported Charles a hundred per cent. The chemistry was there, and if there's no chemistry, brother, you're in a bad way.

"Enough credit has not been given to people like Hilly Brown, Milton Carter or Robert Golden. Hilly is a great architect and he designs his sets from a high point of view, always looking down on something. Milton Carter kept things going and made it easy to talk with Charles. Charles' sensitivity as a director—who, in my view must be the boss, and if he's a halfway decent person he'll get our response—permeated the

*Hungry orphans of the river.*







*A waltz of death for Shelley Winters.*

entire staff. Seldom have I ever seen a group of men who were so eager to come to do a day's work, tough as it was. There was never any squabble about lunch or dinner, it was a matter of 'damn it, we're going to get this out and do the best we know how.'"

The story of *THE NIGHT OF THE HUNTER* occurs in 1930 in the Ohio River Valley country of West Virginia. Harry Powell (Robert Mitchum), a self-ordained preacher, travels the country searching for widows to marry, then kill and rob. Arrested for car theft, he is thrown into the same cell with Ben Harper (Peter Graves), who is to be executed for the murder of a bank teller. Harper had robbed the bank of \$10,000, which was never recovered. Powell is unsuccessful in trying to learn its whereabouts. When Powell is released, he goes to visit Harper's widow, Willa (Shelley Winters) and children, nine-year-old John (Billy Chapin) and five-year-old Pearl (Sally Jane Bruce). Only the children know that the money is stuffed in a doll Pearl always

carries, and they were sworn to secrecy by their father.

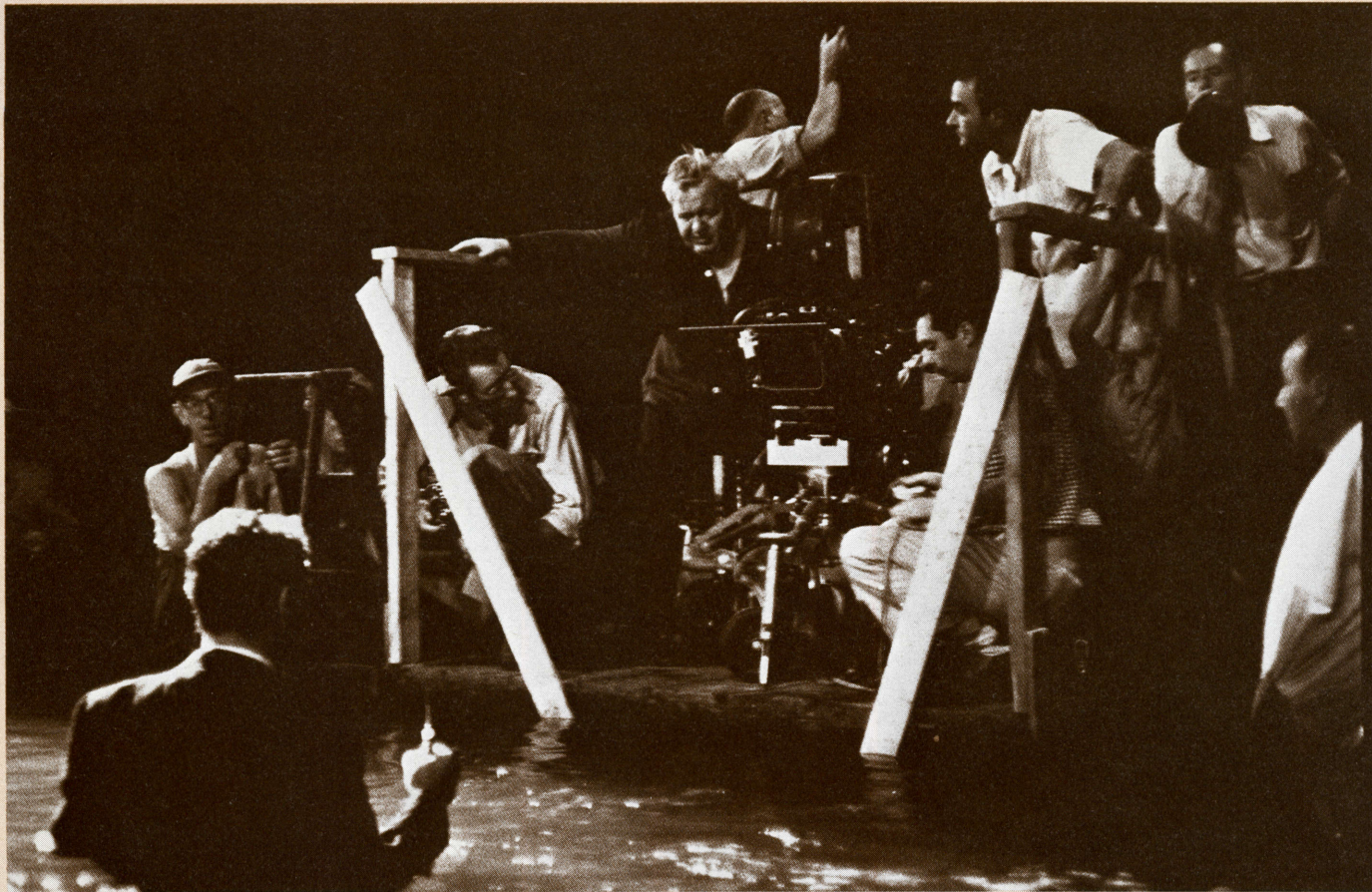
Powell becomes popular in the small town and Willa, prodded by well-meaning townfolk, accepts his proposal of marriage. Once he is convinced that Willa knows nothing about the money, Powell murders her, disposes of the body in the river, and tells the townfolk she has run away with another man. He tries to harrass the children into leading him to the money, but they escape in a row boat. They flee down river while he follows on a stolen farm horse.

The children eventually are taken in by Miss Rachel (Lillian Gish), an old lady who looks after river orphans at her farm. When Powell finds where the children are, he tries to terrorize Rachel into giving them up. After a long siege, Rachel wounds Powell with a shotgun blast. He is arrested, put on trial, and condemned to hang. John and Pearl remain with Rachel.

Such are the bare bones of the story. It is in the fleshing out that the greater interest lies. The novel is written in a pretentiously poetic style, while the movie is built of clean-cut, simplified compositions reminiscent of the black-and-white line illustrations popular in books and periodicals of the Thirties. Despite its grim theme and relentless atmosphere of menace, the picture contains a surprising amount of humorous incident, some of it decidedly grotesque and occasionally slapstick. Aside from the quaint *patois* of the rural folk and the medicine-show con art of the evil preacher, comic bits are artfully placed at moments of suspense to ease the tension of the viewer and give him an opportunity to chuckle at the right places instead of giving vent to nervous laughter at moments when it would be fatal to the mood.

One such episode occurs when Powell almost captures the children in a dark fruit cellar and a shelf full of home canned goods crashes down on his head. Later, when he is within an





inch of catching the youngsters, he takes an Oliver Hardy fall into a mud hole. And when the preacher, brandishing his deadly switchblade, tries to crawl under a porch after the boy, Rachel aims her shotgun at his stern and forces him to back out.

Mitchum's performance—arguably his finest contribution to the screen—seems inspired. It takes courage for a popular romantic star to accept such a role, a situation not unlike Robert

*Mitchum, up to his chest in the river on Stage 15, brandishes his knife for the camera. Laughton, Sy Hoffberg and Cortez are grouped around the camera.*

Montgomery's precedent-setting portrayal as a murderer of women in *NIGHT MUST FALL* (1936)—a superb but predictably unpopular performance. Preacher Powell is introduced as the driver of a stolen touring car. He

*Lillian Gish, ready to protect her flock.*



addresses an invisible presence: "What's it to be, Lord, another widow? Has it been six? Twelve? I disremember. You say the word and I'm on my way. You always send me money to go forth and preach your Word. A widow with a little wad of bills hidden away in the sugarbowl . . . Sometimes I wonder if you understand. Not that you mind the killin's. Yore book is full of killin's. But there are things you *do* hate, Lord: perfume-smellin' things, lacy things, things with curly hair." His most popular sermon demonstrates the power of love over hate, which he symbolizes with a wrestling match between his right hand, the fingers of which are tattooed with the letters L-O-V-E, and the left, on which H-A-T-E is spelled out. "These fingers has veins that lead straight to the soul of man!" he tells the awed rustics. He is by turns charming, comical, grotesque and terrifying.

Equally fine is Lillian Gish as Miss Rachel, a character invested with the spiritual qualities Powell pretends to possess. Small and deceptively frail-looking, she proves more than a match for Powell—convincingly. One of the strangest scenes in any movie occurs when Powell, lurking in the night shadows outside Rachel's house, be-

*Continued on page 1335*





*Director of photography Jost Vacano, BVK, with the special gyro-stabilized Arriflex used for hand held tracking shots in the submarine. First assistant Peter Maiwald used a remote focus control to follow focus as the camera moved through the compartments.*

## PHOTOGRAPHY FOR

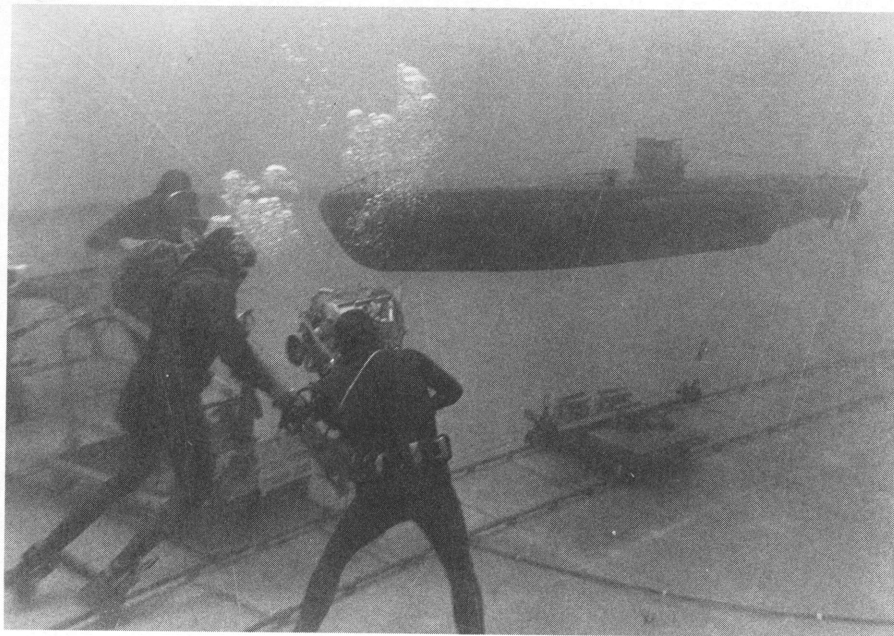
# Das Boot

by JOST VACANO

The film **DAS BOOT** is based on an actual experience by Lothar Günther Buchheim, who wrote the book by the same title. It is about the experiences on board the German U-boat "U-96," while on patrol in the Atlantic Ocean during 1941, from the point of view of its German crew.

Already in 1976 this project was planned as a feature film with U.S. participation. The director was to be John Sturges at first, and later Don Siegel. Robert Redford was originally cast in the role of the U-boat commander. The building of the boat had already been commissioned when unexpected differences between various American screenwriters and the author of the book, Buchheim, caused the project to collapse. Finally in 1979, Bavaria Studios again created the opportunity to realize this production as a purely German undertaking by making the feature film in combination with a simultaneous five part television series. As director, Wolfgang Petersen who also wrote the screenplay, was chosen. **DAS BOOT** was not only to become the most expensive German film ever made, but also technically the most complex and elaborate.

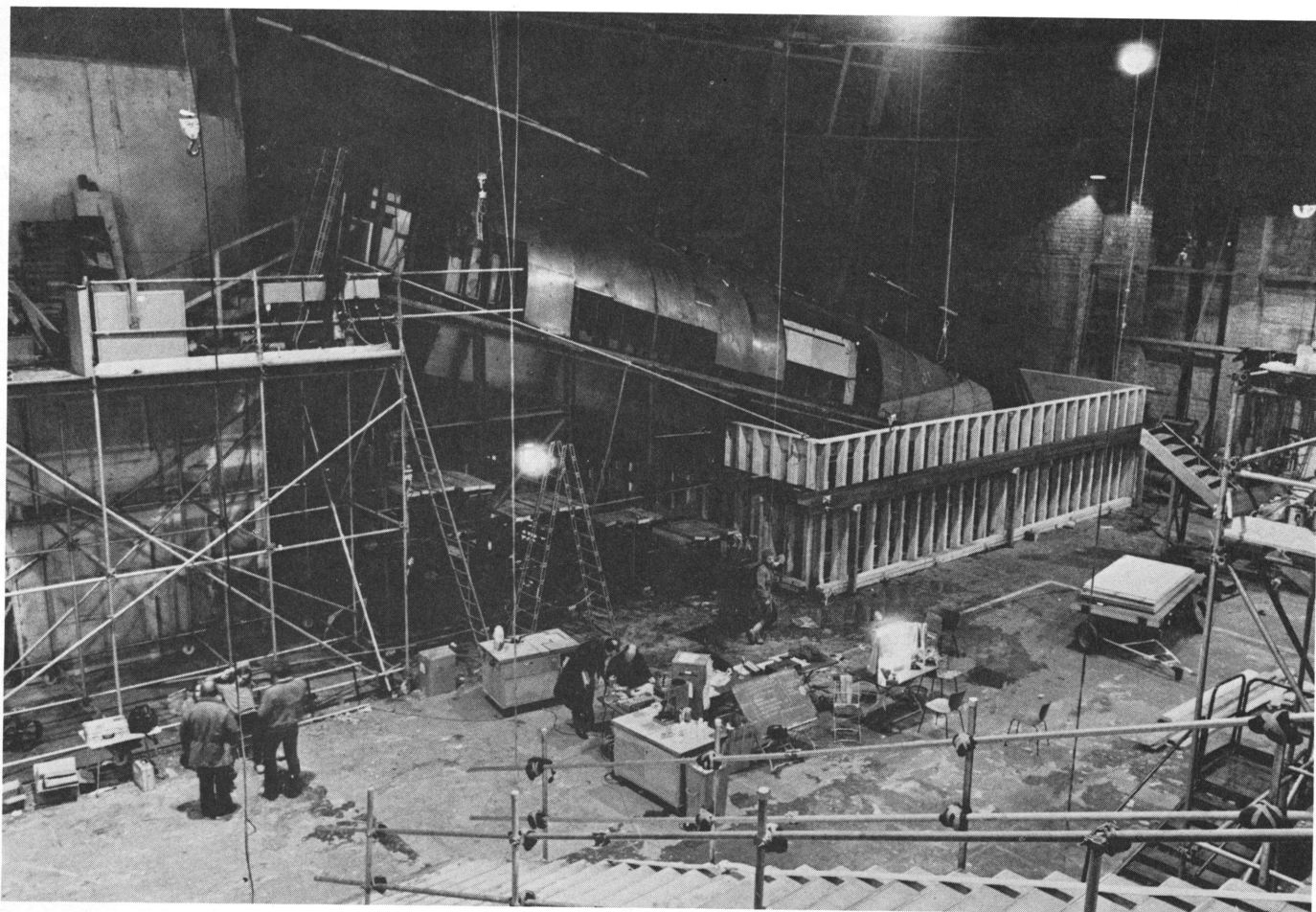




*(ABOVE) Underwater sequences were photographed by Gill Woxholt, BSC. (BELOW) Part of the interior set for the sub in a tank on the stage for shooting the scenes in which the boat has bottomed out off Gibraltar.*

As director of photography, I was confronted with a new problem, never before encountered: the enormously confined interior of the U-boat. I further had to deal with the resulting restrictions in lighting, the matching of various scale models both above and below water, storm scenes and explosives, a large number of optical effects, and the development of special camera systems and mounts.

DAS BOOT is not a war movie, but rather a movie about people during war as seen in the microcosm of a U-boat. It tells the story of young men who are still half-children, adventurous, misguided by fascist propaganda, fascinated by technology and almost without exception volunteers, unknowns. For this very reason there are no stars in this film. A large part of the crew was cast with lay actors, and only the important parts were cast with professional actors. Indeed, only the part of the commander was cast with an internationally known actor, Juergen Prochnow. Glamour and obvious technical slickness had no place in the movie. Rather, absolute authenticity was required, above all in the lighting. The camera had to subject itself to the same confines as





*Herbert Grönemeyer (right) plays the war correspondent modelled after Lothar-Guenther Buchheim, author of the book based on his own experiences during the war.*



*Juergen Prochnow plays the U-boat commander sent on a futile mission off the coast of France. Vacano's use of colored light was realistic and at the same time greatly intensified the impact of scenes in the boat.*



*The crew reacts with relief as the boat pulls out of a dangerous dive in an attempt to evade enemy depth charges.*







*Crew members are almost swept overboard as the boat weathers a storm on the surface. Miniature shots were combined with shots on the stage to create a harrowing sequence.*

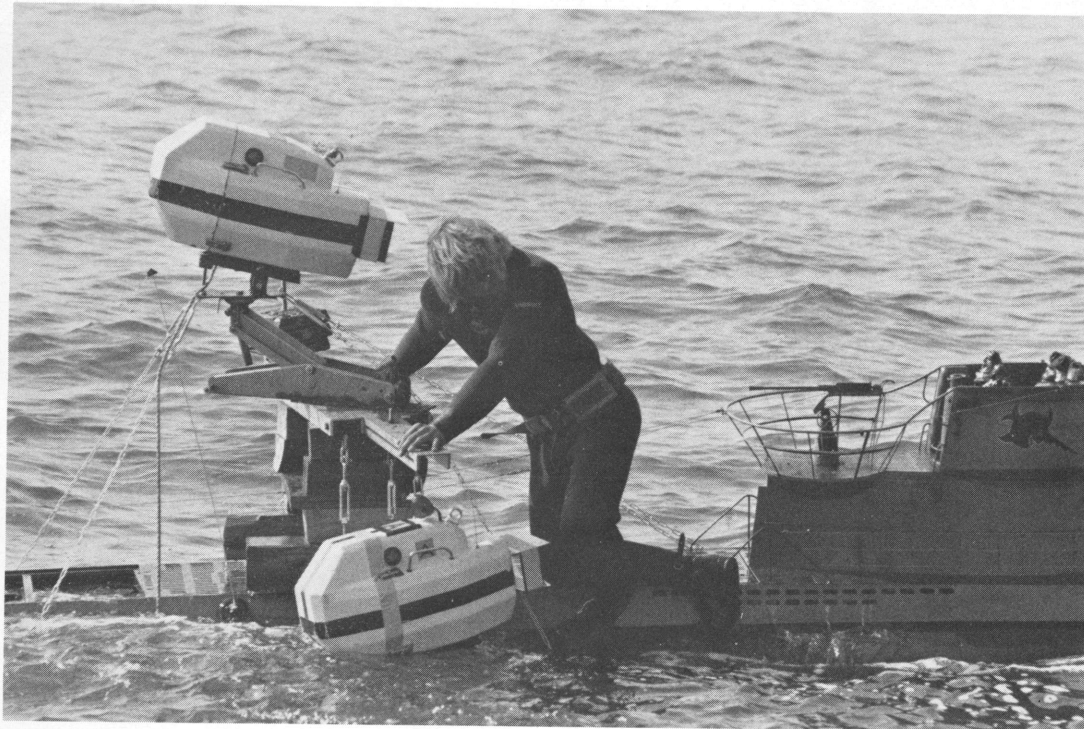


*Set decoration, lighting and attention to detail overall combined to produce a palpable sense of the stifling and claustrophobic conditions on board the boat.*



*Conditions on board a merchant marine vessel where the crew is given a hero's welcome contrast sharply to those on the U-boat and provide only a brief and ironic respite from their harrowing experiences beneath the surface.*





*Checking the cameras in underwater housing mounted on the 40 foot model U-boat used for exterior shots of the boat at sea.*

*A full scale model of the boat was used for exteriors in LaRochelle.*



the actors. It had to play the role of an observer, i.e. no removable walls, cranes or dolly tracks, etc. The requirement of extreme mobility within the narrow confines of the boat would not even allow the use of a "Steadicam." It had to be a hand held camera!

At first, this presented a major problem. Did not a big expensive movie have to be especially perfect in its technical aspects, without the minor flaws which one accepts very often when there is a lack of time and budget? How does hand-held camera work and almost no lighting fit into this concept? But I have long learned that a major ingredient of our profession has to do with guts, and this was ultimately what helped me make the decision. The documentary style of the film also led to the choice of the negative we used, which was Fuji 8517/8518 with its subtle colors and contrasts.

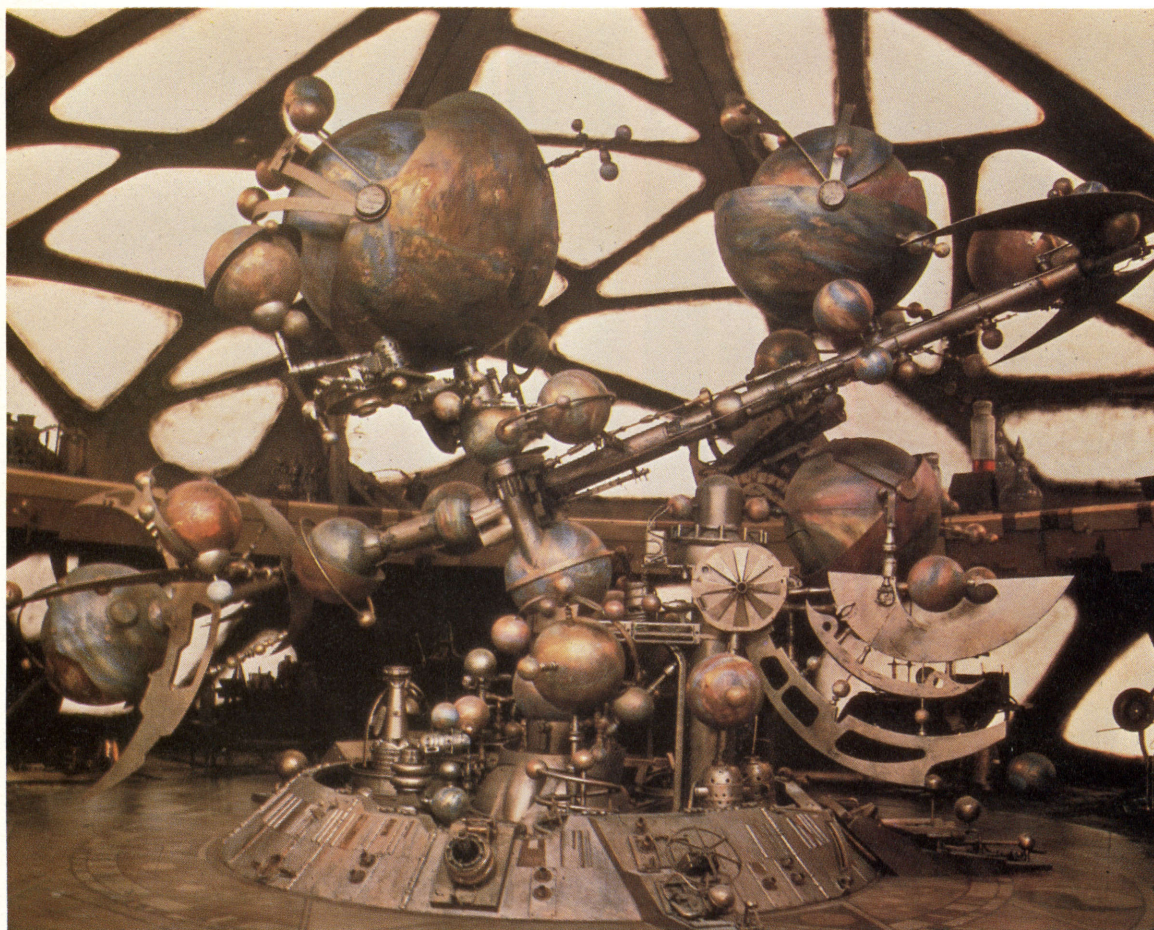
The main character in the film is most certainly the boat itself. However, none of the VIIC U-boats had withstood time since the war in good enough condition for filming of all interior and exterior scenes. Rolf Zehetbauer, the Oscar winning set designer, therefore created a whole armada of U-boats authentic down to the most minute detail. He built one interior model as well as a complete

*Continued on page 1325*



# CREATING A WORLD FOR THE DARK CRYSTAL

by DAVID W. SAMUELSON & ANN TASKER



*The fantastic orrery, a mathematical representation of the solar system, inside the observatory of Aughra.*



THE DARK CRYSTAL is a fantasy adventure inspired by myths and fairy tales which represents an attempt to do on film something comparable perhaps to what J.R. Tolkein did in writing THE HOBBIT. It involves the creation of an entire world filled with bizarre creatures and magical landscapes, a world with its own history and civilization but without any human inhabitants. It is an archetypal story of a quest involving a conflict between forces of good and evil in a time of crisis, and its impact depends on the richness of texture and detail.

Such a film is an ambitious undertaking to put it mildly and most people would assume that it could be done only with very elaborate animation. THE DARK CRYSTAL, however, is not an animated film. It was shot live action with creatures walking around and talking to each other on sets at EMI Elstree Studios, and the creatures are not simply actors wearing costumes. They are incredibly sophisticated puppets, some of which required 5 operators using radio control or a variety of mechanical, electrical and hydraulic control systems.

The person who conceived this project and probably the only person in the world audacious enough to pull it off was Jim Henson, the creator of The Muppets. At first sight the Gelflings, Skeksis, Mystics, Garthim, Landstriders, et al. of THE DARK CRYSTAL are a far cry from Kermit and Miss Piggy; but the techniques used in the design and operation of the puppets for THE DARK CRYSTAL



*These hieroglyphics on the Gelfling ruins tell of a prophecy that the Skeksis will be overcome by the Gelfling. It is the only thing feared by the powerful and despotic Skeksis.*

*Kira with two of the Pod People in the Pod village.*







*The castle of the Dark Crystal, its grandeur buried under ages of filth and decay, rises above the desert. Drawing by Brian Froud.*

are an extreme evolution of the techniques Henson developed with The Muppets. Yoda, who was performed by Henson's partner Frank Oz, represents a state in the development of these techniques, and it is no accident that Henson's co-producer on THE DARK CRYSTAL was Gary Kurtz, producer of THE EMPIRE STRIKES BACK.

Henson began working on THE DARK CRYSTAL in 1977. He started with a sense of the kind of world he wanted to create and began visualizing creatures before he really had much of a storyline. One day Jerry Houle, vice president of licensing for his company, showed him a book called *The Land of Froud*, which was an anthology of drawings by Brian Froud. Froud is an English illustrator



*Character concepts by Froud. (ABOVE) The Skeksis. (BELOW, LEFT) One of the Mystics. (BELOW, RIGHT) A woodland creature.*

best known in America for his work on the bestseller *Faeries*, and Henson saw in his work the style that he felt was needed for THE DARK CRYSTAL.

Froud recalls their collaboration:

"He was, I think, looking for something different to the style he had been working in and it is interesting to discover how different it was. Whereas the Muppets are very simple bold shapes, what I designed was very complex and complicated. It was, I think, an amazing leap into the unknown and an enormous act of confidence on Jim's part to imagine that it could work, because I didn't know.

"We started off with a small group of people in New York, just talking about what the world might be and what the creatures might be in this world. Jim had a fairly strong idea about what the Skeksis might be. They are the evil creatures, and he





(RIGHT) A preliminary conceptual painting by Harry Lange, production designer:

(BELOW) Some of the early conceptual sketches of the Skeksis characters by Froud.



felt that they were reptilians dressed up in very extravagant and opulent clothes, living in a castle. They were fairly easy for me to design, but then I had to populate the rest of the world and that was sort of unknown to Jim. So sitting around in a small group of people we would talk about not necessarily what the creatures might look like but some of their personalities, where they might be placed in this world and what they might be doing. It was like a community effort or a discussion group. I would be sitting doodling away, just making the sketches, and people would say yes and no and what things were working. Then, eventually once the broad basis was worked out, it became specific and I did more finished drawings for all the creatures. I was responsible for the conception of an entire

*Continued on page 1316*

The woodland settings have the intricate detail that made the great fairytale illustrations of Gustave Dore and Arthur Rackham so effective. This pre-production visualization by Froud shows why.









A technician makes preliminary tests of the armatures of the Jen and Kira characters. The "tendons" of this arm are intricate enough to allow full play of individual fingers.

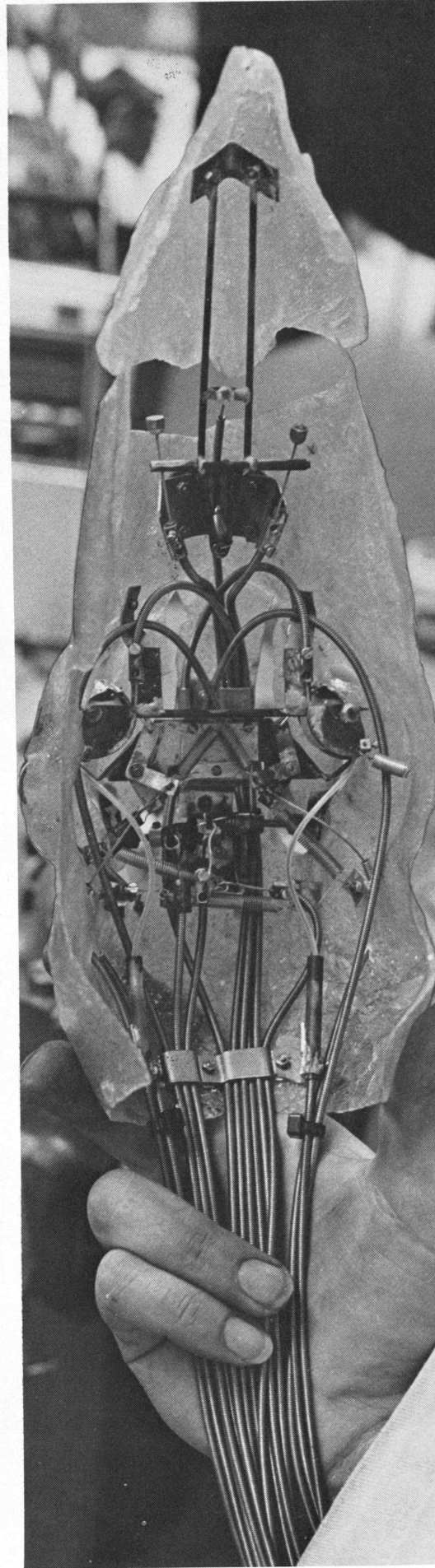


(OPPOSITE) A gallery of puppets created from drawings by Brian Froud and sculptures by Lyle Conway and Tim Clark.



Two sculptors prepare a prototype of one of the monstrous Skeksis, translating the conceptual drawings into three-dimensional characters.

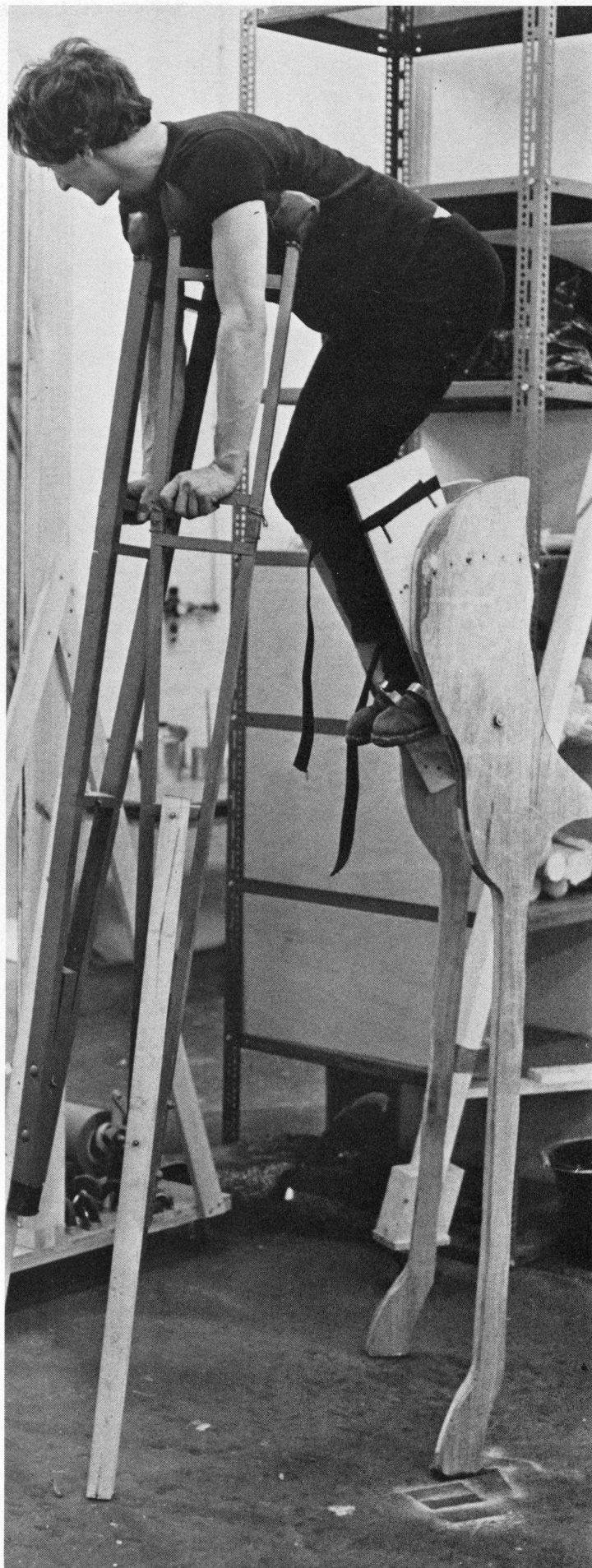




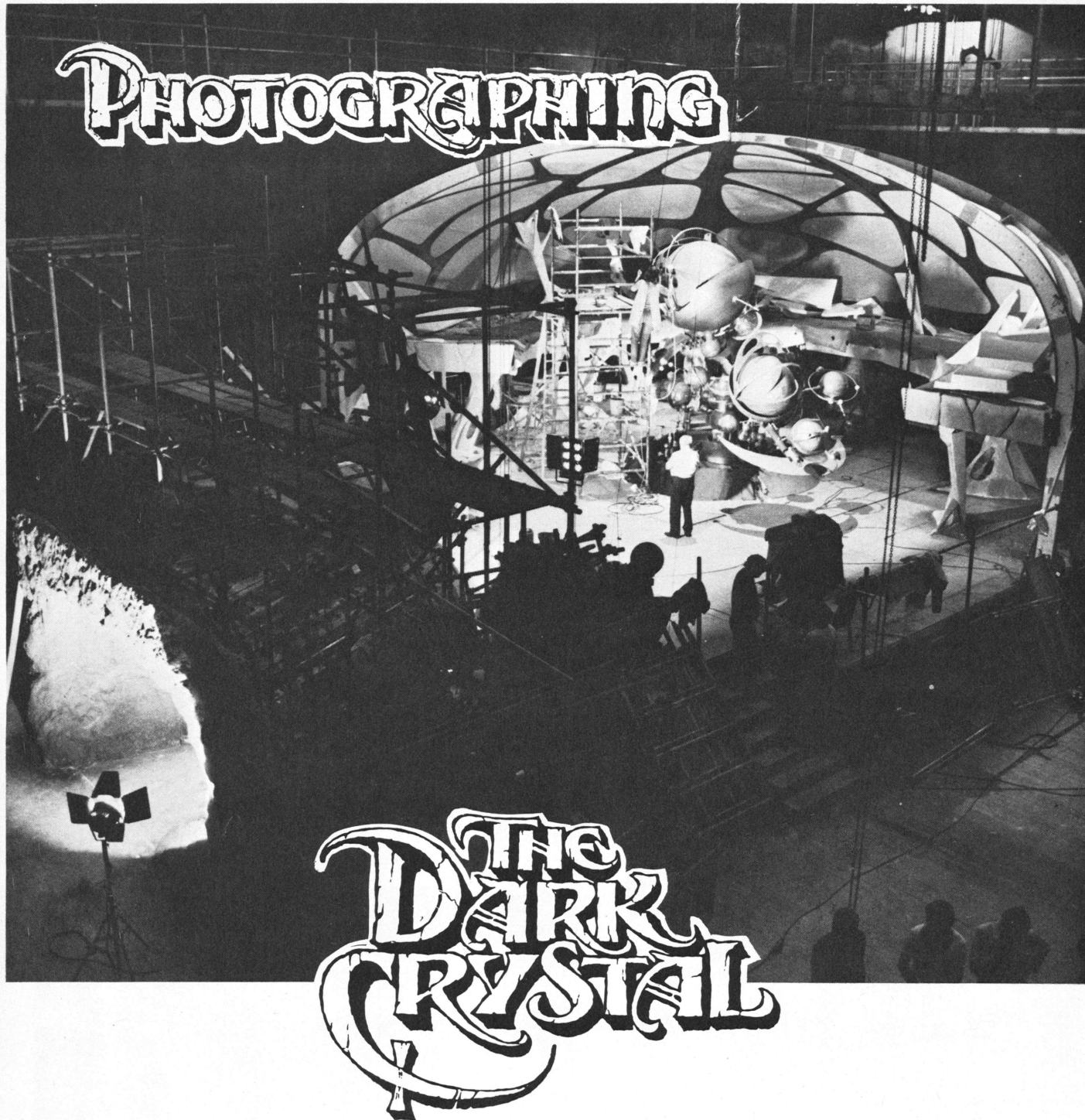




(OPPOSITE PAGE, TOP LEFT) A Skeksis head showing the baroque details that give it an appearance of malevolence. (OPPOSITE, RIGHT) The inner workings of the Skeksis skull are complex. (OPPOSITE, BELOW LEFT) Two of the Pod people unclothed. The spongy "flesh" covers a skeleton-like armature. (ABOVE) A technician assembles the beetle-like armor of a Garthim. (RIGHT) A designer tests the stilt-legs of one of the great Land Striders.







Some eighteen months before THE DARK CRYSTAL started principal photography I received a phone call totally out of the blue, asking me to meet Jim Henson and Frank Oz for dinner. An unusual film project was to be discussed, and they thought I might be interested. I cannot honestly say that my reaction to that phone call was totally enthusiastic, but as much out of courtesy as anything else I agreed to journey to London to meet them.

by OSWALD MORRIS, B.S.C.

Jim and Frank revealed to me their idea of a movie to be called THE DARK CRYSTAL. I listened intently to all they had to say but still cannot honestly admit, even at this moment, that I was all that enthusiastic. However, on previous occasions I have had the same reaction to new projects and therefore felt it prudent to ask for time to consider what I might do.

At home, I talked at length about this with my wife and slept on the idea for many days. Even then I can't honestly say that my thoughts about the movie had changed, but I did agree to a second meeting with Jim and Frank, where the movie was discussed in greater detail. I could begin to see the ideas that were being thought about, and I asked for one more brief respite before making my final decision. The idea at that stage was for a two movie project, THE



DARK CRYSTAL being the second of the two movies and THE GREAT MUPPET CAPER being the first one.

---

*THE DARK CRYSTAL is one of the biggest and most difficult movies I have ever been asked to photograph.*

---

Jim felt that if we were going to undertake so vast a project as THE DARK CRYSTAL it was necessary for us all to work together as a team

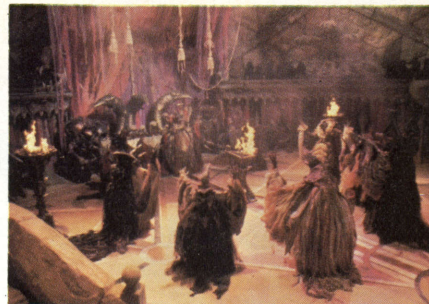
ahead of time, and this proved to be totally justified.

I then quite confidently made up my mind that here was something I just had to try. I had never before photographed, certainly the Muppets, nor any form of film puppetry, and it seemed to me that the challenges were enormous.

The plan was to work during the summer, before either movie started, carrying out exhaustive tests for THE DARK CRYSTAL, which was to be the second movie, but at the same time preparing THE GREAT MUPPET CAPER, by way of looking for locations, etc. This was the plan that was finally adopted, and on reflection there is no doubt in my mind that it worked.

During the summer a lot of time would be spent testing various as-

*Continued on page 1312*



*Highly imaginative cinematography was necessary to bring to life the previously unseen world of THE DARK CRYSTAL. (TOP) The funeral of the Emperor of the Skeksis in the great, decaying castle. (CENTER) The Mystics on their trek from Mystic Valley to the Skeksis castle. (RIGHT) Jen, Kira and Fizzgig make the treacherous crossing over Black Lake. (BELOW) After escaping from the deadly Garthim, Jen falls asleep in Kira's arms.*





# A.G.E. Inc. 1982

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|                                                                                                   | Sale Price  |
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| Cinema Products Crystal BNC-R    | \$ 500.00   |
| Mitchell MK II Crystal           | \$ 1,500.00 |
| Mitchell MK II High Speed        | \$ 1,500.00 |
| Mitchell MK II Variable Speed    | \$ 500.00   |
| Mitchell MK II 110V Sync.        | \$ 300.00   |

## TRIPODS AND HEADS

|                              | Sale Price  |
|------------------------------|-------------|
| O'Connor 150 Head            | \$ 1,500.00 |
| O'Connor 100C Head           | \$ 950.00   |
| O'Connor 50 Claw/Ball Head   | \$ 800.00   |
| Arri Hi-Hat                  | \$ 30.00    |
| Mitchell Tripods Standard    | \$ 150.00   |
| Mitchell Tripods - Sawed Off | \$ 150.00   |
| Mitchell Tripods - Baby      | \$ 150.00   |
| Ronford - Standard           | \$ 300.00   |
| Ronford - Baby               | \$ 300.00   |
| Mitchell Hi-Hat              | \$ 20.00    |
| Geared Wedges                | \$ 350.00   |
| Worrall Heads                | \$ 4,000.00 |

## LENSES

### \*ZOOM LENSES

|                                   |             |
|-----------------------------------|-------------|
| Angenieux 25-250 Arri Mount       | \$ 5,500.00 |
| Angenieux 25-250 BNC-R Mount      | \$ 5,500.00 |
| Angenieux 25-120 Arri Mount       | \$ 8,000.00 |
| Angenieux 20-120 BNC-R Mount      | \$ 8,000.00 |
| Angenieux 12-120 Arri Mount       | \$ 800.00   |
| Angenieux 10-150 Arri Mount       | \$ 1,250.00 |
| Cooke 20-100 Arri and BNC-R Mount | \$10,000.00 |
| Cooke 25-250 Arri and BNC-R Mount | \$ 350.00   |
| Canon 25-120 BNC-R Mount          | \$ 800.00   |

### \*PRIME STANDARD MOUNT LENSES BNC-R MOUNT

|                          |           |
|--------------------------|-----------|
| 15mm f/3.5 Kowa          | \$ 500.00 |
| 20mm f/2 Kowa            | \$ 500.00 |
| 20mm T 2.3 Super Baltar  | \$ 500.00 |
| 25mm T 2.3 Super Baltar  | \$ 500.00 |
| 25mm f/1.8 Kowa          | \$ 500.00 |
| 32mm f/2 Kowa            | \$ 500.00 |
| 35mm T 2.3 Super Baltar  | \$ 500.00 |
| 40mm f/2 Kowa            | \$ 500.00 |
| 50mm T 2.3 Super Baltar  | \$ 500.00 |
| 75mm f/2 Kowa            | \$ 500.00 |
| 75mm T 2.3 Super Baltar  | \$ 500.00 |
| 100mm f/2.3 Kowa         | \$ 500.00 |
| 100mm T 2.3 Super Baltar | \$ 500.00 |

### \*PRIME SUPER SPEED LENSES BNC-R MOUNT

|                  |           |
|------------------|-----------|
| 18mm T 1.6 Canon | \$ 500.00 |
| 24mm T 1.6 Canon | \$ 500.00 |
| 28mm T 1.6 NAC   | \$ 500.00 |
| 35mm T 1.4 Canon | \$ 500.00 |
| 35mm T 1.3 NAC   | \$ 500.00 |
| 50mm T 1.3 NAC   | \$ 500.00 |
| 55mm T 1.4 Canon | \$ 500.00 |
| 75mm T 1.3 NAC   | \$ 500.00 |
| 85mm T 1.4 Canon | \$ 500.00 |

### \*PRIME STANDARD LENSES ARRI MOUNT

|                           |             |
|---------------------------|-------------|
| 8mm T 2.2 Zeiss Distagon  | \$ 900.00   |
| 9.8 f/1.8 Tegea           | \$ 1,200.00 |
| 14.5mm f/3.5 Angenieux    | \$ 200.00   |
| 16mm f/2 Zeiss Distagon   | \$ 800.00   |
| 18mm T 2 Cooke            | \$ 400.00   |
| 18mm T 2 Cine Xenon       | \$ 400.00   |
| 24mm f/2 Zeiss Distagon   | \$ 1,200.00 |
| 25mm T 2.2 Cooke          | \$ 400.00   |
| 28mm f/2 Cine Xenon       | \$ 600.00   |
| 32mm T 2.3 Cooke          | \$ 850.00   |
| 32mm f/2 Zeiss Planar     | \$ 750.00   |
| 35mm f/2 Cine Xenon       | \$ 600.00   |
| 40mm f/2.8 Kilitiff Macro | \$ 150.00   |
| 40mm f/2 Cine Xenon       | \$ 600.00   |
| 50mm f/2 Cine Xenon       | \$ 400.00   |
| 50mm T 2.2 Zeiss Planar   | \$ 850.00   |
| 50mm f/1.8 Cooke          | \$ 400.00   |
| 75mm f/2 Cine Xenon       | \$ 300.00   |
| 75mm f/2.6 Cooke          | \$ 300.00   |
| 85mm T 2.2 Zeiss Planar   | \$ 850.00   |
| 90mm f/2.8 Kilitiff       | \$ 150.00   |
| 100mm f/2 Cine Xenon      | \$ 300.00   |
| 600mm Kilar-Tele          | \$ 300.00   |
| 800mm f/6 Century         | \$ 200.00   |
| 1000mm f/8 Century        | \$ 350.00   |
| 1000mm f/6.3 Omnitir      | \$ 400.00   |

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## Sale Price

|                |             |
|----------------|-------------|
| Arri III Video | \$ 1,500.00 |
| Arri IIC Video | \$ 1,500.00 |
| 35BL Video     | \$ 1,500.00 |
| XR35 Video     | \$ 1,500.00 |
| MKII Video     | \$ 1,500.00 |
| BNC-R Video    | \$ 1,000.00 |

## \*PRIME SUPER SPEED LENSES ARRI MOUNT

|                           |             |
|---------------------------|-------------|
| 18mm T 1.4 Zeiss Distagon | \$ 3,000.00 |
| 25mm T 1.4 Zeiss Distagon | \$ 2,000.00 |
| 35mm T 1.4 Zeiss Distagon | \$ 2,000.00 |
| 50mm T 1.4 Zeiss Planar   | \$ 2,000.00 |
| 85mm T 1.4 Zeiss Planar   | \$ 2,000.00 |
| 135mm T 2 Zeiss Planar    | \$ 2,000.00 |

## C-MOUNTS

|                        |           |
|------------------------|-----------|
| Cooke 1" T 1.6         | \$ 139.50 |
| Cooke 1" f/1.4         | \$ 195.00 |
| Soligor 1" f/1.4       | \$ 99.50  |
| Yvar 75 f/2.8          | \$ 185.00 |
| Switar AR 1" f/1.5     | \$ 225.00 |
| Switar RX 16 f/1.8     | \$ 195.00 |
| Tamron 16mm f/1.6      | \$ 89.50  |
| Cosmicar 8.5 f/1.5     | \$ 125.00 |
| Baltar 29mm f/1.0      | \$ 350.00 |
| Sony 16mm f/1.8        | \$ 129.00 |
| Zeiss 50 f/2.8         | \$ 135.00 |
| Angenieux 1" f/0.95    | \$ 595.00 |
| Angenieux 3" f/2.5     | \$ 475.00 |
| Cine Ektar 1" f/1.4    | \$ 125.00 |
| Cine Nikkor 50mm f/1.8 | \$ 150.00 |
| Cooke 2" T 1.6         | \$ 125.00 |
| Baltar 2" f/2.3        | \$ 135.00 |
| Mati 12mm f/1.2        | \$ 125.00 |
| Cooke 4" T 2.5         | \$ 279.00 |
| Wollensak 1" f/1.0     | \$ 135.00 |
| Cooke 1" f/1.9         | \$ 145.00 |
| Cooke 4" f/4           | \$ 100.00 |
| Nominar 15mm f/1.4     | \$ 125.00 |
| Baltar 3" f/2.3        | \$ 150.00 |

## ARRI MOUNT LENSES

|                                   |             |
|-----------------------------------|-------------|
| Schneider Cinegon 16mm f/2        | \$ 395.00   |
| Schneider Cinegon 10mm f/1.8      | \$ 595.00   |
| Kinoptik 40mm f/2                 | \$ 395.00   |
| Schneider Cine Xenon 75mm f/2     | \$ 435.00   |
| Schneider Cine Xenon 50mm f/2     | \$ 425.00   |
| Schneider Cine Xenon 25mm f/1.4   | \$ 435.00   |
| Schneider Cine Xenon 16mm f/1.9   | \$ 325.00   |
| Schneider Cine Xenon 35mm f/2     | \$ 325.00   |
| Schneider Cine Xenon 50mm f/2     | \$ 325.00   |
| Schneider Cine Xenon 25mm f/1.5   | \$ 325.00   |
| Zeiss Sonnar 85mm f/2             | \$ 350.00   |
| Schneider Xenon 75mm f/1.2        | \$ 365.00   |
| Zeiss Planar 50mm f/2             | \$ 405.00   |
| Cooke Kinetel 50mm T 2 f/1.8      | \$ 450.00   |
| Kinoptik 100mm Macro Killar f/2.8 | \$ 595.00   |
| Ornitar 90mm f/4.5 w/Cradle       | \$ 4,995.00 |

## ZOOM LENSES

|                                               |             |
|-----------------------------------------------|-------------|
| 17-85 f/2.2 Pan Cinor Arri                    | \$ 375.00   |
| 12-120 f/2.2 Angenieux "C"                    | \$ 1,795.00 |
| 12-120 f/2.2 Angenieux "C" 7 1/2" VF          | \$ 2,200.00 |
| 12-120 f/2.2 Angenieux "C" 12" VF             | \$ 2,200.00 |
| 12-120 Canon Macro-Zoom Arri 16 BL            | \$ 1,995.00 |
| 12-75 f/2.2 Angenieux Arri 16 BL              | \$ 2,195.00 |
| 9.5-95 f/2.2 Angenieux "C" 7 1/2" VF          | \$ 3,750.00 |
| 9.5-57 f/1.6 Angenieux Arri                   | \$ 3,250.00 |
| 12-240 f/3.5 Angenieux Arri                   | \$ 7,995.00 |
| 9.5-95 Angenieux "C" Mt w/7" VF               | \$ 3,500.00 |
| 12.5-75 Angenieux in 16BL Housing Arri "B" Mt | \$ 1,995.00 |
| 9.5-95 Ang. Arri "B" Mt                       | \$ 3,500.00 |
| 17-85 Pan Cinor "C" Mt                        | \$ 450.00   |
| 35-140 f/3.5 Ang. CM-3 mt                     | \$ 2,450.00 |
| 25-250 f/3.2 Angenieux Arri                   | \$ 6,200.00 |
| 28-280 f/3.5 Zomomatics Arri                  | \$ 4,995.00 |
| 60-240 f/5.9 Berthoit w/VF BNC Mt.            | \$ 3,995.00 |

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## Sale Price

|                              |           |
|------------------------------|-----------|
| Wollensak 15' f/5.6 Arri STD | \$ 300.00 |
| Wollensak 20' NC MT          | \$ 350.00 |

## PROJECTORS

|                                                                                                                                                                                                                                    |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 16mm Norelcos (1 pr) 2/2500 watt Xenon (Hughes) Lamp Houses, Solid State Power Supply, Change-Over, pedestals, 1 1/2" lenses, 2 1/2" lenses, Anamorphic lenses, excellent, used only 500 hrs. New Price \$22,000.00, complete pkg. | \$12,500.00 |
| 16mm Siemens Interlock projector complete w/ amplifier and dual speakers, records and plays back                                                                                                                                   | \$ 2,295.00 |
| 16mm EIKI RT-1 projector w/wireless remote control, unit                                                                                                                                                                           | \$ 995.00   |
| Xenon projector Mdl. 940. Very low hrs.                                                                                                                                                                                            | \$ 1,495.00 |
| 16mm L & W 224A Analyst (No control cable)                                                                                                                                                                                         | \$ 450.00   |
| ELMO 16LX 1020 Xenon, Like New                                                                                                                                                                                                     | \$ 6,500.00 |
| Kalart-Victor 16 ARC                                                                                                                                                                                                               | \$ 1,195.00 |

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## LIGHTING

|                                               |                |
|-----------------------------------------------|----------------|
| Genarco Solar Follow Spot w/Pedestal          | \$ 2,195.00    |
| Kliegl 10K's                                  | \$ 245.00      |
| Kliegl 5K's                                   | \$ 195.00      |
| Mole Richardson 2K's \$75.00 ea.              | 3 for \$200.00 |
| Colortran Super Beam 1000                     | \$ 195.00      |
| Colortran Multi-Broad                         | \$ 120.00      |
| Colortran Par Lite with Model CJ Voltage Conv | \$ 135.00      |
| B & S Underwater Lights (AC) 5500-10          | \$ 280.00      |
| Colortran 6' Anti-"G" Hangars (Like New)      | \$ 145.00      |
| Multi-10                                      | \$ 79.00       |
| Mini-Lite 10                                  | \$ 75.00       |
| Sylvania Sun Gun                              | \$ 42.00       |
| Multi-6                                       | \$ 94.00       |
| Set Lite                                      | \$ 75.00       |
| Sylvania Sun Gun Dichroic 4" x 4"             | \$ 6.00        |
| Colortran 2K Soft light 104-301               | \$ 320.00      |
| Colortran Super Beam 1000 100-045             | \$ 175.00      |
| Colortran Multi-Broad                         | \$ 127.50      |
| Colortran Channel leg stand                   | \$ 40.00       |
| Colortran castered stand, heavy duty          | \$ 65.00       |

## CAMERA SUPPORT AND GRIP

|                                                                           |             |
|---------------------------------------------------------------------------|-------------|
| Porta-Crane (Fits on McAllister Crab Dolly)                               | \$ 4,995.00 |
| TV Pedestal, large wheel, Hydraulic                                       | \$ 495.00   |
| Quick-set Gibraltar Cradle Head w/legs, center post & dolly               | \$ 1,195.00 |
| Quick-Set Samson Tripod w/Fluid Head (Like New)                           | \$ 675.00   |
| Miller STD Ball Tripod Legs                                               | \$ 495.00   |
| Pro Jr. Legs                                                              | \$ 75.00    |
| Arri 35 Ball Top Legs (New)                                               | \$ 595.00   |
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| AGE Pro Jr. Hi-Hat (New)                                                  | \$ 35.00    |
| AGE Mini-Tilt Plate (New)                                                 | \$ 95.00    |
| NCE 3-Wheel Dolly                                                         | \$ 295.00   |
| Westinghouse HC101 Anti-Vibration Mount w/ Sensors For Pan, Tilt, and Yaw | \$12,500.00 |

Items listed with \* are individually priced. However, in most cases Cameras, Motors, Magazines and Lenses are to be sold as complete packages only. Use combined prices to determine package price.

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## SOUND

## Sale Price

|                                                                                                                                                                                                                              |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Complete 16mm Studio Package, Magnasync/Moviola 3-Mag Recorders, 2 Dubbers (Edge/Center Track), Rack Mounted, 3 Amp. Equalizers, Patch Bay w/Cords Mixing Console w/Talk-Back & Monitor. Interlocked Bell & Howell Projector | \$ 6,995.00 |
| Nagra III Recorder w/Crystal & 7 1/2" Reel Cover                                                                                                                                                                             | \$ 2,750.00 |
| Arrivox Tandberg Recorder, Very Good                                                                                                                                                                                         | \$ 895.00   |
| Optasound Sync Cassette Recorder                                                                                                                                                                                             | \$ 495.00   |
| Westrex 35mm Mag. Recorder, 1000' Capacity w/Power Supply, Voltage Control, Mixer & Cables                                                                                                                                   | \$ 8,495.00 |
| RCA Galvanometer                                                                                                                                                                                                             | \$ 995.00   |
| Maurer Mod "F" Galvanometer                                                                                                                                                                                                  | \$ 1,995.00 |
| Western Elec. Ser. 42 Mod. RA. 1241 Light Valve                                                                                                                                                                              | \$ 375.00   |
| Western Elec. Mod. RA-1437 Light Valve                                                                                                                                                                                       | \$ 395.00   |
| RCA Mod. 1600 Portable Mixer (New, w/o Battery Pack)                                                                                                                                                                         | \$ 375.00   |
| Nagra SN, C-219                                                                                                                                                                                                              | \$ 1,800.00 |
| Sony ECM 50, C-219                                                                                                                                                                                                           | \$ 175.00   |
| AKG D-900                                                                                                                                                                                                                    | \$ 275.00   |
| Shure SM 12 Headsets                                                                                                                                                                                                         | \$ 77.00    |
| Uher Report 4000 L Recorder                                                                                                                                                                                                  | \$ 849.00   |
| Sennheiser MKH 124                                                                                                                                                                                                           | \$ 217.00   |

## EDITING

|                                                                                                 |             |
|-------------------------------------------------------------------------------------------------|-------------|
| Synchronizer, 16mm 1-Gang HMS                                                                   | \$ 125.00   |
| Synchronizer, 16mm 2-Gang HMS & Mag Head                                                        | \$ 150.00   |
| Synchronizer, 16mm 2-Gang HMS                                                                   | \$ 150.00   |
| Synchronizer, 16mm 2-Gang HMS OPT/Mag, Comp Heads                                               | \$ 275.00   |
| Synchronizer, 16mm 2-Gang 35-1-65, Neumade                                                      | \$ 395.00   |
| Sound Reader w/SP/Amp, SRM 16                                                                   | \$ 79.95    |
| URS Amp OPT/Mag                                                                                 | \$ 85.00    |
| URS Amp Mag                                                                                     | \$ 65.00    |
| HFC Amp-Z                                                                                       | \$ 85.00    |
| Viewer PRO-JR 16mm                                                                              | \$ 395.00   |
| Viewer Zeiss MoviScop                                                                           | \$ 225.00   |
| Splicer, Neumade 16mm                                                                           | \$ 35.00    |
| Splicer Craig 16mm                                                                              | \$ 10.00    |
| Splicer Hollywood Schoen 35mm Tape                                                              | \$ 75.00    |
| Splicer Robot II, Auto 35                                                                       | \$ 225.00   |
| Splicer HFC FSC-1A 35mm HOT                                                                     | \$ 327.00   |
| Sound Reader SRM-16                                                                             | \$ 35.00    |
| Petersen 35mm Cue Marker (Punch)                                                                | \$ 25.00    |
| Neumade Showtimer ST-16                                                                         | \$ 149.50   |
| PRO-JR 16mm Ediola w/o Amp                                                                      | \$ 475.00   |
| Neumade SP2527 Sync Block (2 ea) 35/70                                                          | \$ 425.00   |
| Seiki 16mm Block Counter                                                                        | \$ 85.00    |
| Moviola UL-20-CS up right w/arms                                                                | \$ 3,900.00 |
| Editing Board, Craig-Projecto-Editor, 3-Gang 16mm Sync block, Rewinds, spacers, clamps, mounted | \$ 695.00   |
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| Rewinds HFC 35mm w/2000 flange                                                                  | \$ 95.00    |
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| Moviola K-20 16mm Viewer                                                                        | \$ 695.00   |

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# FAERIE TALE THEATRE

## Where Past Meets Present

by LEE GREGORY

*"That's the thing I'm proudest of. We get very high-quality work for not a whole lot of money. The fact that you could think up an idea and see it realized in about three months was wonderful for someone who has lived through the life of an independent producer where you think of something and if you're lucky, two-and-a-half years later you see something."*

John Taplin, President of Lion's Gate Films in West Los Angeles, talks about the facility, purchased from Robert Altman last July. Now it's dedicated to the premise that video has an important role to play in the making of films, not only as a cost-cutter, but as a creative aid and an enhancement of the film art. As Lion's Gate pursues video assisted filmmaking, it's also set up with the technology and expertise to assemble productions intended for end release on videotape as well. A case in point is FAERIE TALE THEATRE.

An anthology of classic fairy tales translated to the screen, FAERIE TALES is the brainchild and inspiration of Shelley Duvall (POPEYE, NASHVILLE, BREWSTER McCLOUD.) It has found a domestic home as a made-for-cable series on "Showtime" with Viacom handling international distribution. Duvall's feel for the creative combined with Taplin's sense of budget and technology are adding up to what many critics have said can't happen on videotape: quality. Evidence to the contrary is on

the casting sheets for FAERIE TALES. With each episode (generally 40 to 60 minutes in length) budgeted at about \$350,000 and two weeks' production time (one week rehearsal, one shooting) one might wonder how it is that THE FROG PRINCE stars Robyn Williams (MORK AND MINDY, POPEYE) and Teri Garr (ONE FROM THE HEART, CLOSE ENCOUNTERS

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*Duvall says she wanted "real" performances, but sets and a "look" which crossed the line from reality to fantasy, a kind of "Viewmaster slide" appearance.*

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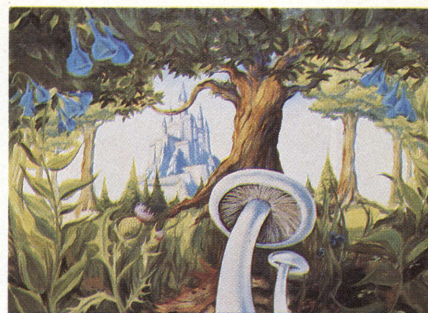
OF THE THIRD KIND). Duvall plays opposite Ned Beatty in RUMPLESTILTSKIN with Herve Villechaize of FANTASY ISLAND in the title role, and HANSEL AND GRETEL features Joan Collins and Paul Dooley. Not only have these actors and actresses performed for FAERIE TALES already, but several have asked to come back and be involved in future productions in the series.

There are others who've been there and want to come back as well: Monty Python's Eric Idle wrote and

directed THE FROG PRINCE, in so doing transformed a one-page fairy tale into a seventy-five page shooting script. Jim Frawley, whose credits include THE MUPPET MOVIE, directed HANSEL AND GRETEL for FAERIE TALES. Lighting director Bill Klages of Imero Fiorentino Associates; production designer Jefferson Eliot, who did a stint with Disney; Co-Producer Bridgette Terry; writer Pat Resnick (NINE TO FIVE;) and the list continues, all professionals more accustomed to traditional film work who say they're truly enjoying and learning from this venture into the world of magentic recording. Three tales are on tape already, six more have been contracted for and based on reaction so far more titles may be produced in the future.

Duvall says it was 14 years ago that she started collecting fairy tale books, especially antique editions. She did it, she says, because they represented magic to a little girl, "tales of mystery and imagination." They were also lessons in psychology. "They were the psychiatrists of the world then, and they were an entertaining way of teaching your children morals." Besides, fairy tales by definition have something that gives them universal appeal. The actors seemed to feel it: Shelley says no matter who she talked to, it seemed that everyone as a child had fantasized adventures in the role of some fairy tale character. Now, to many, the idea of playing such a character was irresistible. So casting was never a problem. As Shelley puts it, "When you read a fairy tale, you just





*Background paintings are combined with live action scenes shot against a blue screen.*



# Rumpelstiltskin



*Shelley Duvall plays the daughter/queen in "Rumpelstiltskin" as well as producing the entire series. Herve Villechaize is Rumpelstiltskin, Ned Beatty is the King and Jack Fletcher is the Wizard.*







# Hansel and Gretel



*Ricky Schroder and Bridgette Andersen are Hansel and Gretel. Paul Dooley is the father and Joan Collins plays both the stepmother and the witch.*



*More location exteriors were used for "Hansel and Gretel" than for the other stories.*



think of people who'd be good in this part or that."

The other reason for 14 years of antique book-buying was visual art, that of the old storybook illustrators, and herein is a second special production value of FAERIE TALE THEATRE. The "look" of each tale is built around the style of one of the old masters of storybook illustration. The production design of RUMPLESTILTSKIN is patterned after the drawings of N. C. Wyeth. Arthur Rackham's influence guides HANSEL AND GRETEL, while the work of Maxfield Parrish provided guidelines for THE FROG PRINCE. (Note: in the case of FROG, "guidelines" is just about the strongest honest word available to describe the influence *any* illustrator could have had on the proceedings. As mentioned, Idle began with one page of material and wound up with an entire scenario complete with two separate societies, adjoining kingdoms, feuding families, golden balls and a lot of other things the Brothers Grimm never envisioned. Still, the main thread of the story remains intact. Every installment in the series is open to interpretation by the creative team behind it, and in the case of FROG, it's Idle's eye and ear for comedy that are important.)

For the most part, sets, costumes, lighting, all were designed with the visions of the original illustrators in mind. As executive producer on the project, Duvall says she wanted "real" performances, but sets and a "look" which crossed the line from reality to fantasy, a kind of "View-master slide" appearance.

Eric Idle's work THE FROG PRINCE has already been mentioned as one of the keys that allows FAERIE TALES to rise above what a more traditional production approach would have put on the screen, given the relatively miniscule budget going in. One writer did not this anthology make, though, and an explanation of HANSEL AND GRETEL would be incomplete without an awareness of the role played by Pat Resnick.

Resnick says, "When they first approached me about the project, I thought they wanted parody, but then Shelley told me they wanted the script to be really scary and classical. In doing the writing, I tried to use very formal 19th century speech. Also, Jim recognized Joan (Collins') ability to do things in high style. There were script problems we just had to work through together, too, like how to create the

logic of the part where the woodcutter would actually agree to leave his children. I read about 12 different versions of HANSEL AND GRETEL, all of which vary only in small things, and did the first draft in about a week. Fortunately I'd had some experience with 18th century writing, and so sort of have an ear for the language necessary."

For those who may not be entirely up on their Brothers Grimm; Hansel and Gretel, after being abandoned by the woodcutter and his wife and finding the old witch's completely edible confection house in the woods; are imprisoned in a shed until the old crone can cook them up and eat them. But in Resnick's screenplay, Hansel finds he is not alone in his "cell." Instead, he is joining another child whom the witch has been fattening up for some time already. This

---

*Everyone on this project  
is making far less money  
than normal, but that's  
compensated for by a cut  
of the pie at the end so  
there's a very  
participatory feeling about  
the work.*

---

third child was an invention of Frawley and Resnick's to add "fright" to the sequence.

Pat points out a difference she notices between film and video—in this project it was about three months from the time she was first approached about doing it to the time she and the others were able to view a first cut. In a film, that time can be more like two years.

Resnick adds, "Everyone on this project is making far less money than normal, but that's compensated for by a cut of the pie at the end, so there's another reason why there's a very participatory feeling to the work *without* the feeling of a major project."

The team says Shelley's drive and personality are important ingredients in the mix that has allowed FAERIE TALES to turn out the artistically and

technically high-quality work it has. She takes a pragmatic view, attributing the quality-on-a-budget achieved to date to three factors; adherence to the principals of most favored nations, the insistence above all on quality, and profit-sharing on the part of the principals.

Production Designer Jefferson Eliot points out that two purposes—that of a "not quite real" feel to the shows and economy of production—were served brilliantly by the "Ultimatte" process. Simply put, Ultimatte is a very advanced, state-of-the-art chroma key system. In FAERIE TALES, it allowed two vital motifs to be executed with far less expense and more flexibility than would have been possible with more traditional film traveling mattes. First, it allowed size manipulation of objects and characters in the foreground. In FROG, Robin Williams, clad head-to-toe in a sort of "Kermit-ish" frog costume, appears to be about a foot high throughout almost the entire 52-minute running time. Second, it allowed the extensive substitution of illustrations for sets as backdrops. The quality of the process is sufficient in many cases to create a superb illusion that players are entering and exiting "doors" and "hallways" that in reality exist only as camera cards. Shooting in Ultimatte is much the same as shooting for any chroma key process; a "background" scene is recorded with the actors playing to the location where the tiny frog, for example, should be in the foreground while the "frog" and any props he might use are recorded in front of a blue screen. Later, the recordings are composited. And since it's a process which can be viewed as it's happening in the studio, it has the advantage over an optical traveling matte of allowing a director to coach his talent in both shots as they're in progress. He can "sample" the action and make adjustments to assure, for example, that Robyn Williams as the Frog and Teri Garr as the Princess are playing to precisely the right "empty" locations on their separate sets.

A situation of this type, without the technology of skilled hands and minds directing it, could become little more than "switcher garbage." With that in mind, Lion's Gate's Taplin (functioning as head of Mercury Productions, which, along with Duvall's Playtypus Productions is co-producing FAERIE TALES) saw to it that Bill Klages of I.F.A. was retained as light-



ing director. Taplin had seen a still of a set Klages had lit in *AMERICAN CINEMATOGRAPHER* and had never forgotten it. Klages' attention to detail lighting and shadow, is a textbook study in making the unreal appear real, in extracting a maximum richness and depth from the color and latitude-capturing abilities of videotape. But as video lighting director, Klages' forte is his ability to do this within a mood or atmosphere which is consistent with itself and with the artistic development of the production. While lighting style has been a pride of the motion picture industry for decades, far too much color television production has simply been flat-lit and staged with single-minded reliance on color to provide depth and Z-axis dimension.

Klages says less is more. "That scene in 'THE FROG PRINCE' where the frog takes a bath in the washbasin while he talks with the princess standing in the background, the frog's shadow there makes it a marvelous effect. It's the shadow that's the most important thing, because that removes it from being just a flipcard.

"It's interesting about the shadow—if I were to define the style of lighting I like best and think looks best on television, because that's really what I'm after; I would define it as being unrealistic, copied almost in its entirety from feature film lighting of the late 30's, 40's and early fifties. Single main light source, that type of thing. And when you talk about a shadow, you're talking about a very heavy, contrasty picture. The explanation I always give to myself is that the system (television) is so low-definition that what is really important to present your story pictorially is to keep everything as simplistic as possible. Don't put too many areas of interest in the picture, and in addition separate everything as much as you can. One way to do that is with defining high contrast.

"The example I always use, if you intend to have an effect like that be successful, and you decided let's say, that the bedroom would be where a scene actually would have been played, you would be interested only in light coming from the fireplace and candles, and there would be a lot of light reflected from surfaces and an overall diffuse feeling and so you couldn't develop a shadow—it just wouldn't exist. Shadows, though, would make the scene play better on

film or tape. The whole trick to that chroma key thing is to *develop* the shadow because that suddenly makes it appear that that person (or frog) really *is* in that washbasin."

Klages continues, "On the insert things, where we place the entire action before a miniature painting backdrop, the way to do it is to keep it simple, really. If you keep the lighting intensity even enough across the field on the blue screen and the foreground and the performer, that insert will be spectacular, and that's with only one lamp on the performer. You make sure that you're close to the same light source when you go to the live set—that the light is coming from approximately that same direction—and it's finished, basically. But it's hard to keep it simple, and that's really the whole key. When you decrease that shadow area in the

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*Actors feel more relaxed  
with tape, more able to  
try something a different  
way. That's also  
communicated somehow  
to the camera operators.*

---

chroma key, then it becomes a higher brightness, less contrasty, and it doesn't look as well. It's interesting."

It is. But back for a moment to the business climate which spawned this whole creative mix. John Taplin again: "They (the majors) couldn't really make any changes in their union agreements and so on because they had long-term contracts and that sort of thing. Most of all they couldn't change their relationship with talent in terms of lack of trust. Talent believed it was always going to get screwed, so it always wanted all its money in front. Everybody knows if the talent takes all its money in front, there is no risk, there is no incentive on the talent's part to bring the project in on budget and if they burden the budget, they make it that much harder to recoup, so it's a self-fulfilling prophecy."

"What we did with *FAERIE TALES* and what we're doing with *UNDER FIRE* is say, 'Look, we can't afford what everybody's used to. We have this much money to make this and you like the material and we want to do it. Help us out. No one's going to get a better deal than anyone else. *most favored nations*—that's the rule we use.'"

Duvall agrees. She says she finds her first venture as a producer more rewarding than acting. Part of that reward, she says, is in exercising complete control over a production. She's quick to add, though, that to her that means doing some skillful hiring to enable her to place control of some production elements entirely in the hands of those more skilled. "You judge people by their past work," she says. "If you pick the right people, there's really only a very small risk in a project."

Taplin again: "The director gets three percent, the writer, the lead actor, second actor, sometimes the third actor—a slice of the gross. It's split up nice and even, it's fair and everyone can see that. We were pretty open about it and found out that hell, people did want to work. And especially when it's for cable, it's two, three weeks out of your life—people say to themselves, 'What the hell, take a chance.'"

Jim Frawley took the chance. At the Astin/Zappia video editing studios on Cahuenga West he was supervising the first rough-cut of *HANSEL AND GRETEL*. The conversation began as a one-way street; what started as a stream of impressions on the art of video coming from a man who heretofore had been strictly committed to the pure art of film.

"The original concept for *HANSEL AND GRETEL* called for it to be one of the shows with the heaviest use of Ultimatte effects. As it turned out, working through the script with Pat (Resnick) Shelley and the others, we wound up shooting it almost entirely on location with very few." He slides his chair away from the bank of monitors and the on-line editing controller he's been working over and continues, "The locations were done in Griffith Park. He adds with a wry smile, "I'd like to have used Big Sur, but we just didn't have the budget. I took a filmic approach to video, because that's where my background is, and because that's what Shelley wanted."

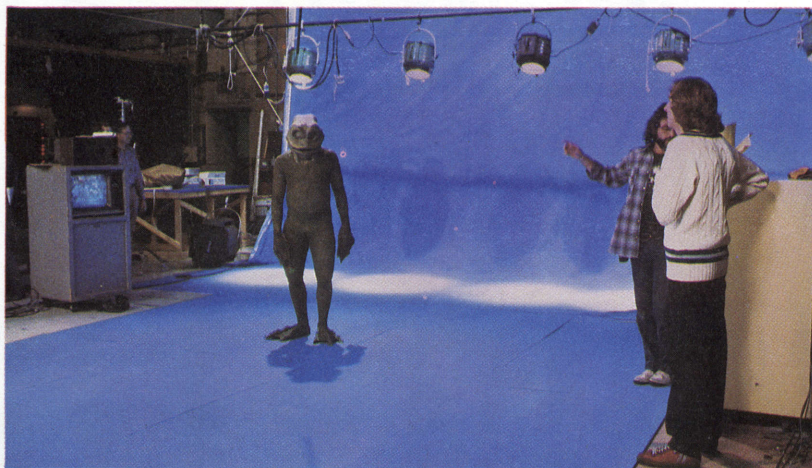
*Continued on page 1332*





*Robin Williams is the Frog, Teri Garr is the Princess and Rene Auberjonois is King Ulrich in Eric Idle's version of "The Frog Prince." Backgrounds were painted in the style of Maxfield Parrish.*

## The Frog Prince



*Setting up a blue screen shot to matte the Frog into a scene.*





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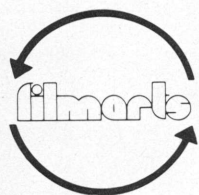
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# EDGE OF THE ART

## A Report From SIGGRAPH

By THOMAS BROWN

Cinema has always been illusion: the telling of a story, the casting of a spell by the manipulation of images and sound. The illusion within the illusion of cinema is known as special effects.

In the last five years, special effects have begun to embrace the art of digital imaging. Once digital imaging is integrated into traditional special effects techniques, the illusion of film will once again be as potent and startling as our grandparent's first sight of the medium.

### A CONDENSED HISTORY

Producers have traditionally invested great amounts of cash into special effects. By incorporating these effects techniques into their pictures, they are able to obtain production values and stylistic touches their budgets could otherwise not sustain. For example, the tremendous percentage of the budget used for special effects work on R.K.O.'s original KING KONG was miniscule when compared to the cost of hiring and then feeding a giant ape. I mention KING KONG because it is considered a milestone in the development of special visual effects. It marked the adaptation of the optical printer for effects work, making it no longer necessary to do all the effects in the camera. Next came Universal's INVISIBLE MAN series of films which were responsible for advancements in matting techniques. Then in the 1940's MGM assembled a first-rate team of effects craftsmen who applied all the known tricks to the making of THE WIZARD OF OZ and THIRTY SECONDS OVER TOKYO. At the same time, breakthroughs in rear projection were happening at Para-

mount for the film DR. CYCLOPS. When THE THIEF OF BAGDAD brought us the blue screen traveling matte system, the bag of trick photography seemed full. But special effects being what they are, that bag only seemed full because in the mid-60's, director Stanley Kubrick demanded a new level of effects excellence for his film 2001. This laid the groundwork for STAR WARS and the development of motion control systems. Now, TRON and STAR TREK II have widely introduced a dramatic new effect to movie audiences: Digital Scene Simulation.

History reveals a parallel between the introduction of a technology and its adaptation by moviemakers into their latest illusion enhancing tool. Just as the stepper motor and closed loop servo systems have made motion control possible, recent advancements in computer imaging techniques are now offering visual possibilities as boundless as the human imagination.

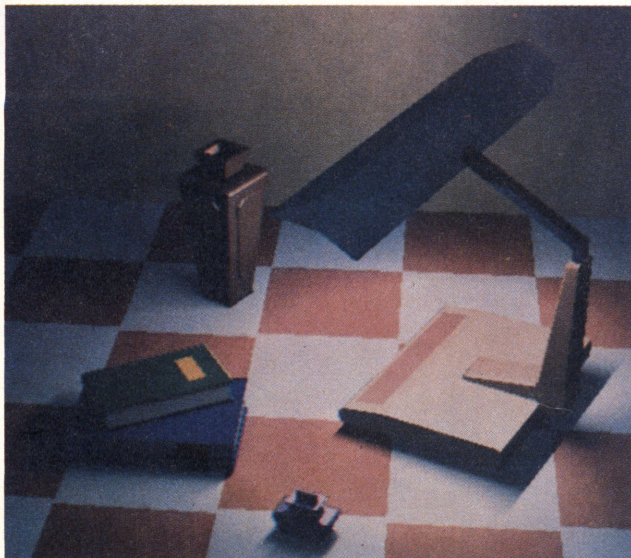
### WHAT IS A SIGGRAPH?

Those responsible for the development of digital scene simulation (DSS), come from the discipline known as computer graphics. Each year, at the end of July, the movers in the field of computer graphics attend SIGGRAPH which stands for the Special Interest Group on Computer Graphics of the Association for Computing Machinery (ACM). Their 9000 members share an interest in the "theory, design, implementation, and application of computer generated images and inter-active techniques to facilitate man/machine communication and understanding." Whew! This means they are interested both in making pictures and designing the machines that produce them.

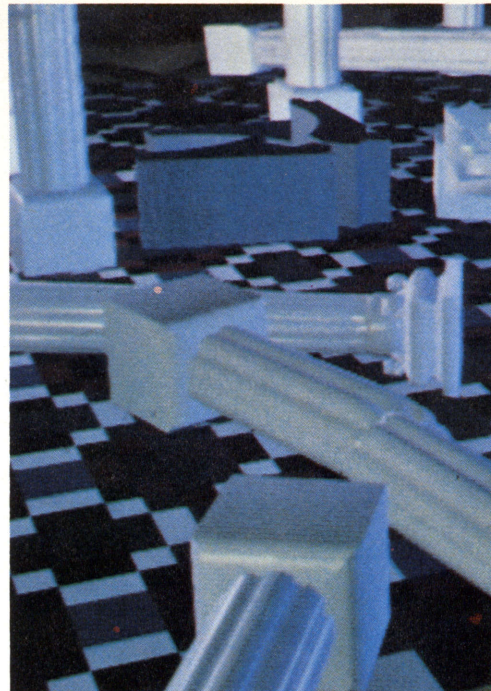
I attended my first SIGGRAPH two years ago in Seattle. I had been hired by Francis Coppola to collect the people and machinery needed for his "electronic cinema" system and was shopping for an electronic paint system suitable for use with his "pre-visualization" storyboarding concept (see AMERICAN CINEMATOGRAPHER Jan. 82). Going to SIGGRAPH opened my eyes to the reasons why George Lucas was then assembling his own team of computer imaging experts. Lucas was also convinced that the future of cinema would be electronic and he hired some of the top computer graphics talent in the world to develop an image system on which he and his colleagues will someday amaze audiences with visual impact previously unattainable.

This year's SIGGRAPH was held in Boston. The advance publicity promised the biggest and best SIGGRAPH yet. With an attendance of 18,000 persons, this year's conference doubled the attendance record set in Dallas last year. Couple that with the fact that last year's attendance doubled the previous year's, and you can begin to understand the explosion of interest in this rapidly evolving discipline. Why are all these people going to SIGGRAPH? Lucasfilm's Ed Catmull has a good answer, "I go to every SIGGRAPH, because everybody in the field is there. I enjoy it. I enjoy meeting with the people, and I enjoy the stimulation that happens. New ideas come out of SIGGRAPH." Upon arriving at the Sheraton Boston, I was greeted in the lobby by a white high-tech monitor on a pedestal. On the screen were the words, "Touch Here For Information." I touched the screen, and it came alive displaying a menu of opportunities. I chose press room and the machine





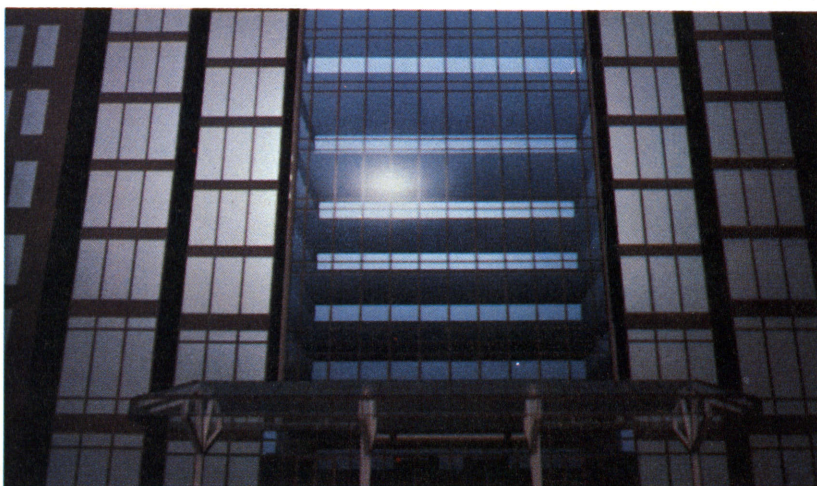
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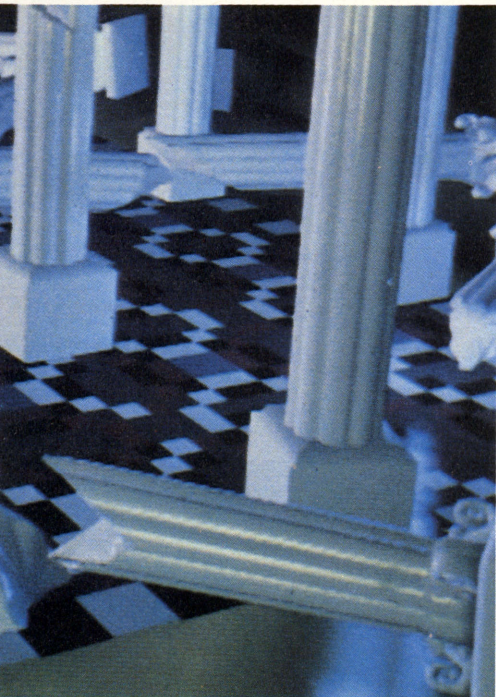
# A SIGGRAPH GALLERY

*With the exception of the brochure cover at the far right, all of these works were part of an art show at SIGGRAPH. The show, put together by a jury consisting of Copper Giloth, JoAnne Culver, Louise Etra, Darcy Goldberg and Aaron Marcus, contained a wide range of abstract works as well as more representational works such as these.*

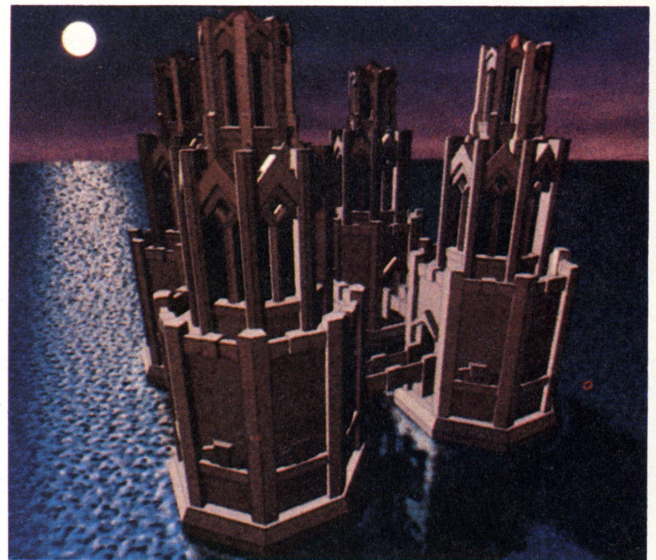


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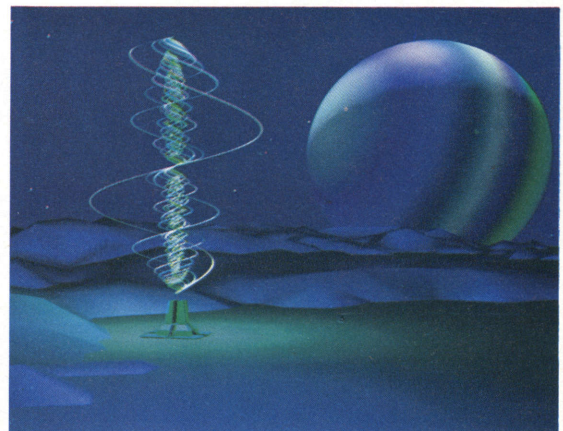
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went into convulsions. I asked a bellhop, and he directed me upstairs. As I entered the press room, John Whitney, Jr. was just finishing a press conference announcing the agreement between his Los Angeles based Digital Productions and Cray Research; whereby John's company will be the first to house the largest, fastest computer ever dedicated to the production of digital images.

The computer, a Cray X-MP/22, is valued at \$12.6 million. Whitney says the Cray, when combined with special custom software designed by himself and his partner Gary Demos, will allow Digital Productions to produce digital scene simulation (DSS) which, "suspends the film viewing audiences' ability to tell the difference between live-action intercut with photographically realistic computer simulation." Whitney went on to add, "We have the most powerful facility yet constructed, which will allow us to produce a massive amount of simple or stylized material for television and great amounts of highly realistic complex images for movies." Lorimar was sufficiently impressed to sign a multi-million dollar production deal with Digital Productions to create original DSS for a major portion of their new action/adventure feature, STAR-FIGHTERS.

## **SIGGRAPH GOES TO THE MOVIES**

One of the most heavily attended events of each SIGGRAPH is the screening of outstanding works, which this year was split over two nights. Tuesday night's "oldies but goodies" film and videotape show reviewed the history of computer graphics beginning with "Force, Mass, and Motion" produced at Bell Laboratories in 1964. But it was Wednesday night's "latest and greatest" which proved the most exciting. The audience was tough and vocal as usual. It was a smoothly run evening with delightful variety displaying a new level of showmanship.

Robert Abel and Associates of Los Angeles started off the show with a short reel containing their vector generated sequence from TRON and a presentation for an architectural firm's design of a proposed sports stadium. The combination of majestic 3 dimensional moves on the simulated stadium and the shameless use of Vangelis' theme from CHARIOTS OF FIRE suckered me into wanting the stadium built.

Aurora Systems of San Francisco reaffirmed that sex sells in an effective promo for the Erotic Film Festival.

Cranston-Csuri Productions of Columbus, Ohio proved there is life between the coasts with their short but effective bouncing crystal.

Jim Blinn's work for the Jet Propulsion Laboratory in Pasadena was, as usual, extremely exciting; both for the complexity of his images and for the inspirational qualities of his subject matter. Like they say, 'the story's the thing,' and in this case the story is a mission to Jupiter. Blinn's mathematically correct simulations of the exploration of deep space are a fine example of the serious use of digital imaging techniques.

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*Stop-motion artists and  
digital scene simulators  
share some common  
concerns and both  
disciplines will benefit by  
establishing  
communication.*

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Lucasfilm's Alvy Ray Smith narrated one of the evening's highlights. The short "Genesis Effect" sequence originated by the Sprocket Systems team for STAR TREK II was the most advanced and effective piece shown at this year's SIGGRAPH. It marked the first showing of images generated by the Lucasfilm team to their contemporaries at SIGGRAPH. The team has now withdrawn from production for a time to develop the Pixar.™ The output stage of the Pixar is to be the long awaited and much desired digital film printer. Look out world when these guys start producing pictures again.

Grumman Aerospace provided this year's audience participation award for comic relief. Their piece was appropriately titled "14 Moving Tanks with Dust." It endlessly repeated 14 moving tanks, with dust.

Digital Effects Inc. of New York was responsible for a short sequence from TRON called "the bit." Nice work.

The applause meter registered its

highest readings during the sample reel submitted by the pioneering New York Institute of Technology (NYIT). NYIT screened several new sequences from THE WORKS. THE WORKS is an animated feature being created electronically in house. Also audience pleasers on NYIT's reel were Tom Brigham's amazing interpolation of a woman's face becoming a lynx and Dick Lundin's animation of an ant.

NYIT was an early entry into the coming digital production sweepstakes. Their creative team of research related production people, under the direction of Dr. Fred Parks, is challenged by doing projects which have not been done before. By pushing the limits of available technology, NYIT's people feel better equipped to design the next generation of computer imaging tools. The good news: The NYIT team is available now for work on projects that are challenging and blessed with budgets that make their efforts worthwhile.

## **TROLLING FOR DOLLARS**

No SIGGRAPH would be complete without a lengthy visit to the equipment exhibit area. The country's economic woes didn't seem to be affecting the 172 manufacturers of computer graphics hard and software. It certainly hasn't affected their advanced research in the field. The sales buzzphrase was, "orders of magnitude improvement" which means the stuff is getting better fast!

Genius is looking at one thing and seeing another. While most of the equipment displayed at SIGGRAPH was not designed with moviemaking in mind, I feel sure that the creative genius of the motion picture community will find many uses for these amazing devices.

As an example, Polhemus Navigation Sciences of Vermont introduced a unique new 3D digitizer which allows 3-dimensional objects to be scanned and converted to data for immediate use in computer generated imaging. It is certain stop-motion artists will figure out a very creative use for this device. What if the stop-motion artist used his talent to move an armature (not a completed puppet but a skeletal armature) and have those movements digitized? The computer could draw various "electronic skins" on the armature as well as fill-in and blur between the positions supplied by the stop-motion artist. In this way, the artist will be responsible for the



subtle life-giving qualities of the animation while the computer takes care of the drudge-work. Stop-motion artists and digital scene simulators share some common concerns and both disciplines will benefit by establishing communication.

## ART FOR ART'S SAKE

The SIGGRAPH '82 art show displayed recent works by artists who give new meaning to paint-by-number (a small digital joke). Pat Cole of Atari's Special Projects Division (we'll hear more from this group, too!) was delighted by this year's emphasis on esthetics as opposed to the degree of difficulty of the piece. The 88 computer generated pieces displayed incredible variety and were a credit to the artists who created them as well as the committee who chose them.

Not to be overlooked are the courses, lectures and papers presented (mostly in English) by experts in the field of computer graphics. One of the most talked about courses this year was titled "State-of-the-Art in Image Synthesis" and featured as instructors Ed Catmull, Loren Carpenter, Rob Cook (all of Lucasfilm) and Jim Blinn (of the Jet Propulsion Laboratory). These courses encourage the exchange of information and philosophies and are partially responsible for the rapid development of computer imaging. There is still an openness among the people you meet at SIGGRAPH.

## SIGGRAPH TOO BIG?

Most of the veterans agreed that SIGGRAPH was getting too big. Remember, for the last 3 years the attendance has doubled each year and while the increased interest is understandable, it also signals complications. A growing emphasis, especially by manufacturers, on business graphics threatens to clog the flow of ideas at SIGGRAPH. Logistically, the greater numbers of people make it more difficult for the movers to find each other at the convention. Also, as business takes over from the creative people, oaths of silence start to be imposed and development becomes incestuous and slows.

But just as we could say New York City is too crowded, one has to admit that for certain things no other place will do. So it is with SIGGRAPH. While it continues to grow and become more congested, there is still no better place for finding out the latest in computer assisted imaging and

meeting with those responsible for its future development.

## COMING SOON

Ultimately, digital imaging will evolve from its usage for special effects and touch all aspects of cinema production. Motion picture laboratories will become electronic as movies containing no special effects spew from digital film printers.

Next year's SIGGRAPH will be held in Detroit (another city trying to adjust to the present and chart its course for the future). Producers and directors planning visually startling projects

may want to attend SIGGRAPH to check out the current possibilities. If they don't find what they are looking for they probably will find the people there who can help them create it.

As my plane gained altitude and Boston became a realistic looking miniature outside my window, I reflected on the incredible things I had seen and the amazing people I had met. I thought of the creative community of illusion waiting back in Hollywood and how exciting these times are for all of us. We in the motion picture business are truly entering the electronic revolution. ■

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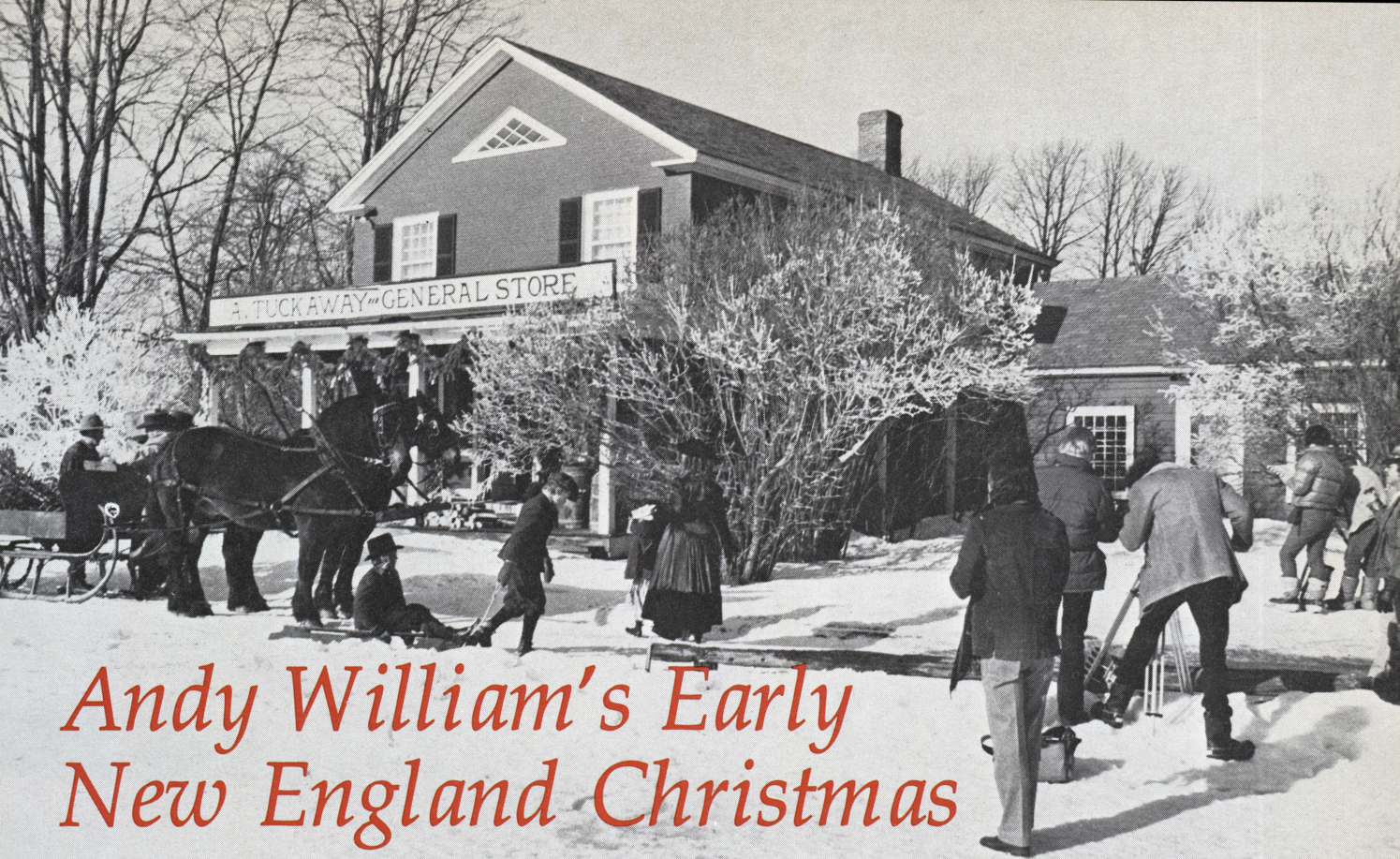




(ABOVE LEFT) Andy Williams rehearses as three cameras set up to shoot with minimal lighting in the schoolhouse. (ABOVE RIGHT) Cameraman Shelly Johnson sets up for a scene with Dick Van Patten, James Galway, Dorothy Hamill and Williams at the train station. The device mounted above the Arriflex is a digital speed indicator used to insure a camera speed of 30 fps. (LEFT) Director Sterling Johnson discusses a bit of action with Aileen Quinn. (BELOW LEFT) Johnson checks a two camera setup to catch Dorothy Hamill as she skates while the Green Mountain Volunteers sing in the foreground of one shot. (BELOW RIGHT) Producer Sam Riddle observes a scene in the general store between Williams and Dick Van Patten. Other customers are a musical group known as La Famille Beaudoin.







# Andy Williams's Early New England Christmas

*The general store of the Shelburne Museum was one of the several authentic buildings used as locations for Andy Williams Christmas special.*

by LLOYD KENT

*Andy Williams' Early New England Christmas* special for CBS, starring Dorothy Hamill, Aileen "Annie" Quinn, James Galway and special guest Dick Van Patten, uses state of the art technology to recreate the feeling of a century old holiday celebration. The special, shot in the unique Shelburne Museum, a collection of 18th and 19th Century buildings housing American antiques and artifacts located in Shelburne, Vermont, marks one of the first and most extensive uses of 16mm Eastman high speed color negative film 7293 for a prime time network production. More than 30,000 feet of 7293 were shot for interiors to be intercut with exteriors shot on Eastman color negative II film 7247 for the special.

The entire show was filmed at 30 frames per second, using modified Arriflex SR cameras. All of the 16mm film was transferred to videotape at Ruxton Ltd. in Burbank with a Rank Cintel MRK-3 flying spot color telecine. Previous Andy Williams Christ-

mas specials have traditionally been shot on videotape with perhaps some film inserts, but this time director Sterling Johnson decided to do an all-film show.

"We wanted to do the entire show at practical locations," says Johnson, "and once we made that decision, there were obvious logistical and cost benefits for shooting on film. Besides, I happen to prefer the 'film look' for most location oriented specials. Also with the improved technology for transferring film to videotape, you can shoot on film and still finish on tape if you prefer."

Since the show was going to be finished on videotape, Johnson decided to shoot everything at 30 fps. Bill Hogan, who transferred the negative to tape cites three reasons for shooting 30 fps for transfer to tape: "First, to match the film frame rate to the video frame rate. That gets rid of the asymmetrical strobing produced by the 3:2 conversion. Second, because you're creating two fields of video out of every film frame instead of two out of one and three out of the next, there's an apparent grain reduc-

tion. Third, because the shutter is moving faster in the film camera, the exposure is shorter and you get a sharper image of moving objects."

According to Johnson: "Chuck Lofthouse, the lighting director, and I made some interesting tests. We shot the same scene running two cameras side by side, one at 24 and one at 30. Then we transferred the film and split screened it. I have to say I didn't see any major difference in the sharpness of the image, but the difference in the movement was very dramatic. The advantage of 30 fps really shows up in kinetic scenes, and this is a special with a lot of dancing and skating. Once you get used to 30 fps, you almost can't watch a film-to-tape transfer from film shot at 24 fps."

Hogan insists that part of what is called the "film look" on television is in fact an inferior image resulting from the 3:2 frame rate conversion when transferring from film shot at 24 fps. Johnson, of course, thinks of the "film look" more in terms of camera angles and lighting. "Chuck and I are both enthusiastic about backlighting. That was especially important in this



show where all the exteriors were snow scenes. If you front light snow, it looks like a glass of milk. You have to backlight it to bring out the texture.

"Then, there were the skating scenes with Dorothy Hamill. I wanted texture, and I also wanted Dorothy to be able to look towards the camera without squinting. With front lighting the glare off the snow and ice is too much to look into comfortably.

"Anyway, in all those backlit scenes, I think that it is much easier for the director to use film. You can do it in video, naturally, if you can bring in enough front light. We did that once with Buffy St. Marie against a New Mexico sunrise; but it's more common to do this type of thing with film, and it's one of the things that adds up to a film look.

"Another consideration is lenses. For instance it's been easier to get long lenses with short depth of field for film cameras. On another special I did with Dorothy, I was able to get shots of her skating through reeds on really long lenses with a lot of soft background which we intercut with videotape scenes within the same skating sequence."

Shooting film at 30 fps of course results in a 25% increase in rawstock and processing costs and a 25% reduction in the running time of a magazine, but Johnson and producer Sam Riddle felt it was well worth it. Hogan insists that properly exposed 16mm negative shot at 30 fps and transferred to videotape on a flying spot scanner probably comes close to the image quality limits of 525 line television and is virtually indistinguishable from a transfer from 35mm.

The decision to use the new high speed negative stemmed from the

nature of the locations to be used. According to Lofthouse, "Sterling and I made a survey of the locations, which ranged from an old countryside store to a chapel, and the natural light we found in the interiors was beautiful. We wanted to make the most of our opportunities to use source light so we decided to use 7293 for the interiors. It is rated for an exposure index of 250 in tungsten light as compared to 100 for the conventional film stock, and that gave us a lot of extra latitude when we needed it.

Johnson points out that there were practical as well as aesthetic reasons for using the high speed film: "Chuck and I have worked together for years, and we've always striven for a natural look, as opposed to a lighted look. We had one scene in the kitchen of a 100-year-old farmhouse. That kitchen was so small, yet we had to get in a cast, crew and two cameras for different setups and sound. There just wasn't room for a lot of lights. It is difficult to find places to hide lights in a comparatively small practical location, especially working in a multi-camera situation such as we had in this scene. I think TV viewers will be sensitive to the fact that we shot this scene in a very homespun practical location, so we didn't want to spoil that effect by lighting the scene as though we were on a sound stage. The Shelburne Museum is a very unique collection of buildings, many of them restored to their former uses, decorated to period. Using the high speed emulsion allowed us to highlight the warmth of the surroundings in which we were shooting."

Lofthouse adds: "The natural light coming into that space was so beautiful, we wanted to take advantage of



it. Of course using more natural light made our equipment package smaller and cut down our setup times too.

Thanks to the reduced amount of equipment as well as extensive pre-production planning, the crew was able to shoot one major segment in the morning and move on to another after lunch. Given the fact that they were also working with a number of non-professionals in the cast, flexibility and lower light levels made a difference. The townspeople of Shelburne and nearby Burlington were a large part of the cast and the low key lighting in the settings allowed them to feel more comfortable and natural on camera.

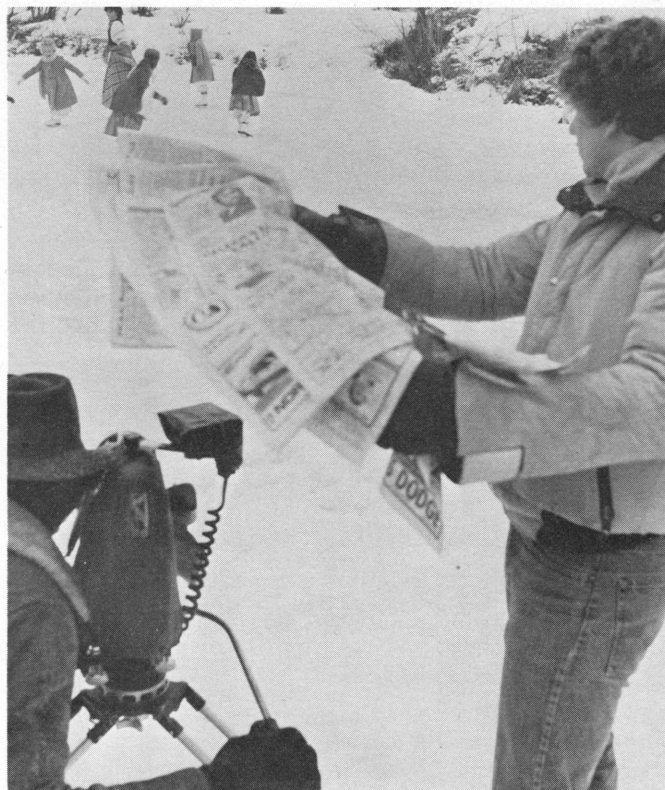
In most cases the lower light levels possible with the higher speed film also meant that the heat from the lights on a set is less bothersome, but in this instance the cast and crew could have used a little extra heat. Most of the buildings in Shelburne are heated only by wood stoves which could not be used during shooting because of the smoke generated. As a result the crew often wore their parkas and hats even in the cramped interiors.

Johnson had seen a 35mm demonstration of the new high speed negative at SMPTE and was very impressed. Lofthouse had previously

*Assistant cameraman Steve Green takes advantage of the luxurious accommodations enjoyed by the crew on location.*







*State of the art technology included a skiploader commandeered to serve as a camera crane and the morning's newspaper used as an umbrella during a snow flurry.*

experimented with another high-speed emulsion, but Johnson was not happy with the grain. By comparison the image characteristics of the 16mm Eastman 7293 seemed very acceptable to him. According to production coordinator Steve Lomas the only problem was tracking down enough of the new film stock. "It had just been announced," he recalls, "and supplies were initially in short supply. The first 50 rolls arrived the day before we were to start shooting. Fortunately for us most other producers wanted the 35mm version of the emulsion so we weren't contending with anyone for what was available in 16mm."

For Lofthouse the high speed film meant that he was able to light interiors with about half the footcandles he would have used with 7247 and sometimes less. "There's one scene in a chapel," he says, "with Andy and a large number of people from the village in period costume—blacks and dark greens—carrying candles. I lit Andy for that with HMI's, but most of the rest of the light comes from those candles."

Another interesting sequence was the scene in the farmhouse kitchen with a family preparing Christmas dinner while Andy sings "Christmas Needs Love." Towards the end there

is a pan to a window with a choir singing outside. Johnson comments, "As I've mentioned, Chuck and I like natural light a great deal. So there were parts of that scene where we had people walking through streaks of light from the window. There is one shot of the father and the son where the father turns into the daylight and his face is totally overexposed. We wanted to let that sort of thing happen, because that's really the way it is. People really do walk into shafts of light, and Chuck's lighting reflected that throughout the entire show."

Lofthouse adds, "I lit the interiors very warm. Sterling and I decided to have things warm—candle lit—and let blue light stream in through the windows. When the lab first printed the dailies, they tried to correct around all my gelling, and as a result everything came out very blue. When we transferred from film to videotape, I made certain I was there for the color correction. That is one of the advantages of working with a telecine transfer device. You can look at the image on the video tube and tell the telecine operator exactly what you like while the transfer is being made."

Not only were scene-to-scene color corrections made during the transfer to tape, but in some instances such as the pan to the window, dynamic

correction was used within a single shot. This again is something that is very difficult to achieve in timing a film print.

"Looking back though," Lofthouse says, "the remarkable thing is that in almost every scene we had enough natural source light to produce a usable image on the high speed film without any additional lighting. The stars wouldn't have looked so good, but there was enough ambient light to get a printable image on film."

For the post-production work rather than transfer the uncut negative to tape and edit in videotape, Johnson chose to have a workprint made which was used for picture editing. "We had two editors working for five weeks on the picture edit," he says. "We sweetened the sound later with Jerry Clemens at Compact Video. We negative cut the show, just as if it were going to release print on film stock, except that we left 24 frame overlaps on the A and B rolls for each cut or dissolve. Then we transferred the A and B rolls along with the cut workprint with identical time code, made a cassette of the workprint and took that to Astin-Zappia. Mario Zappia, the video tape editor, entered the time code into the computer and made a floppy disc of all the edit decisions. When we got to





*James Galway accompanies Williams in a room of the sea captain's house which also had to hold 10 dancers, 10 extras and the 10 man crew. As a result there was precious little room for lighting equipment.*

on-line editing, it was an auto-assembly in real time. You just sat back with your feet up on the console and watched the show go by. When we saw something we didn't like, we stopped and changed it.

"Because of the 24 frame overlaps on the A and B rolls we could change dissolve rates and have enough picture to play with. That's one of the big advantages of finishing on videotape. Also having longer overlaps keeps handling away from the frames actually being used."

It would have been possible to do all the editing on videotape, but Johnson explains his reasons for editing on film with a story: "A couple of years ago while we were editing another film special, there was a videotape editing room across the way where they were editing another musical special. I knew the producer, and he asked me how long it was taking to edit our show. I said ten weeks, and he was stunned. He told me that they had shot their show in two days, but that they wanted to make it look like it was done live in one hour. I told him that we had shot our show in 15 days, but we wanted to make it look like it was shot in thirty and edited in 6 months. He was appalled, but he was plugging in videotape editing cost factors. The cost of editing film is so much lower that you can afford to take more time. Actually the two shows probably cost nearly the same dollars to edit, but the time factor makes a big difference. The thing is, if you make a mistake in videotape, if you say, 'It's going to take us so long to edit,' and it takes an extra day; it

costs you thousands of dollars. If you go an extra day in film, you're talking about peanuts, a couple of hundred dollars."

The final step in post-production was "video sweetening" at Image Transform in North Hollywood. Video sweetening is a process developed by Image Transform for color correction and image enhancement during a tape-to-tape transfer. It uses some of the video signal processing techniques originally developed for their tape-to-film process. According to Johnson, "We took our final edited master and touched up every scene in the show. It really made a big difference in the overall look."

Scene-to-scene color corrections were made during the original transfer from film to tape, but because the A and B rolls were transferred separately, it was not possible to gauge the color of one scene in conjunction with the scenes before and after it. During the editing of the master tape when the scenes were viewed in continuity, it was not possible to make scene-to-scene color corrections. Johnson used the video sweetening process at Image Transform primarily for refining the color correction in a way comparable to the refinements made by a timer after a first trial print has been screened. It is worth noting however that the Image Transform video sweetening process is capable of doing a good bit more to the image than scene-to-scene color and brightness correction. It can do frequency selective image enhancement, noise reduction and video signal correction and, according to Tom Mann, general

manager of Image Transform, "Using these techniques, we can enhance and sharpen the pictures and reduce visible grain by as much as 75%."

Steve Lomas comments on Johnson's approach to the production: "It's obvious that Sterling is concerned with the look and flow of the show as well as the content. The look sets the mood. It tells the audience that they are looking at a high-quality product. He wants to take the time to produce a quality program. I think that goes back to the executive producer Bob Banner and producer Sam Riddle. Everyone in the organization is willing to take the time to do something special."

This included pre-production work with Johnson and Lofthouse walking through every situation and discussing camera angles and lighting. It also included the decision to shoot 30 fps.

"When we first decided to shoot at 30 fps," Lomas recalls, "we weren't even sure how to get there, but we located 30 frame crystal sync modules for the Arriflex SR cameras. We spent a little time worrying about the sound—would the Nagras have to be modified? But it's crystal sync and real time is real time, so there's no problem." Chuck also made some tests to make sure we wouldn't get strobing from the HMI lights, and we didn't find any problems there.

"The hardest thing was getting 30 frame editing machines. We found one 30 frame Steenbeck at Image Transform, and we had two Moviola flatbeds. We had to use the variable speed control on the Moviolas and listen for the right pitch. It seemed fine to most of us, but one day when Andy Williams came by and Sterling screened a sequence for him on the Moviola, the machine only approximated the speed and Andy could tell the pitch was flat."

Nonetheless everyone on the production agrees that shooting 30 fps is the best way to go for television.

Johnson sums up his approach to shooting *Andy Williams' Early New England Christmas*: "This was not a Hollywood soundstage, lights, camera, action sort of show. Shooting on a stage would not have been appropriate for the turn of the century holiday/family atmosphere we were trying to create. Ironically, state of the art technology allowed us to capture the flavor of the period, the museum and the townspeople rooted in century old traditions better than tried and true film and lighting techniques."



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pects of THE DARK CRYSTAL both for mechanical innovation, set design and for me, most importantly, color rendition.

THE DARK CRYSTAL, being a fairytale, is probably to a cameraman one of the most difficult types of movie to photograph. It is difficult

because there is no visual yardstick whereby each and every member of the unit can talk with the same basic understanding. By that I mean, visual realism. A fairytale is not real, it is an interpretation of a story which is probably different in every person's mind.

If I may use the word 'ordinary type of movie' I do not mean either to

denigrate the many wonderful movies that have been made, nor do I wish to exaggerate the importance of THE DARK CRYSTAL, but, it is a fact that with a common visual denominator running through a story, life becomes that much easier for the cinematographer. This was not the case with our particular movie.

I decided at an early stage that the description was not the best way of conveying any idea that I might have to the producers and director. The only way was to do cinematic tests, show the material on the screen and ask them for their comments. We adopted this pattern right from the word go, and I think it was the only way forward at the time.

The designers of the various puppets would produce any that were near enough to be tested and the production design team of Brian Froud and Harry Lange would also build a small part of the set into which that particular character was going to be placed. I would then add my part by way of lighting and cinematographic effects to complete the effect. We would look at this on the screen, discuss it in great detail, and then either accept it or agree to further tests.

We did this throughout the summer, and I well recall that the tests became more complicated, more daring and more interesting as we got our teeth into the project and also as we got to know one another's thinking. At the end of summer the main unit left THE DARK CRYSTAL to carry on and make THE GREAT MUPPET CAPER while the backroom boys carried on with their testing of these very complicated figures.

Several times during the shooting of the first film we would do tests connected with THE DARK CRYSTAL and I well recall the admiration that I had, and still have, for the hard work that Jim Henson and Frank Oz put into the task of trying to make two movies at once, because this is really what happened.

Although we were hard at work making THE GREAT MUPPET CAPER, there were just as many people behind the scenes preparing THE DARK CRYSTAL.

There was a lapse of some six weeks between the completion of the first movie and the first day of principal photography on the second, but that six weeks was probably more hectic than anything that we had experienced so far.

## LIGHTING THE DARK CRYSTAL

**John Harman, the electrical supervisor on THE DARK CRYSTAL, describes the lighting of the picture from his point of view:**

Two days after Ossie came back from Albuquerque at the end of THE GREAT MUPPET CAPER, he phoned and asked if I would come down to EMI studios to look at the half-built sets for THE DARK CRYSTAL. I met him on Stage 3 and he went through what we were to do. He sent me off to the art department to get all the various drawings, and I went home to work out how we were going to do it. I did the drawings at home and worked out the loads we required on DC and the other things that we required on AC.

We started on Stage 4, which was a very big set. Ossie lit it with 1306K space lights, from above, as a basic light. I built boats round the set and filled them with 100 10Ks, stacked in pairs one above the other. We also had three 24K Dino lights plus a large number of 5Ks and about 80 650 watt Jupiters around the floor as well as mini and maxi-brutes in the pit to light up the floor. All of these had to be controlled from one central point.

To all of these we added the colors that Ossie and the art department had decided on: mauves, greens and various other colors which coincided with the same gelatin on the Lightflex. While we were actually shooting on Stage 4 a crew was rigging Stage 3, the Crystal Chamber. In addition to the lights on Stage 4 there were eight 24K Dino lights and four maxi-brutes, 20 or 30 mini-brutes on the stage floor, and eight lightning boxes on stage 3.

The lightning boxes we used

were the standard consisting of two carbons which go together except for this film Ossie wanted to control them all from the camera so we had them made to work off remote control switches. Ossie could operate all eight at once if he wished or he could vary it in shot by having four or six or two or whatever combination he wanted. Also, Ossie wanted a single light source coming down from the center of the set. With all the other lights on it was a problem to get a strong enough light to show up on film, so we mounted an old army searchlight and shined it into a mirror to reflect down onto the center of the stage. With the aid of smoke it registered enough for Roy Field to optically put it on afterwards.

Because of the vastness of the complicated lighting on this picture we spent several weeks beforehand planning with Ossie, rigging the lights and working out the colors. Then we would shoot tests in our lunch break which everyone would look at the next day.

When we started the actual shooting on that stage it would never take us more than about 45 minutes to light any one shot.

On one particular set, the Swamp set, Ossie wanted a lot of depth of field so the lighting was vastly increased in quite a small area. The DC amperage was about 18000 and, because it was confined to half the stage, the temperature on the stage floor was over 100 degrees Fahrenheit. Up near the roof it was somewhere between 120 and 130 degrees.

The electricians operating the lamps would take salt tablets to prevent dehydration and took turns, one hour up there and then half an hour down to cool off.





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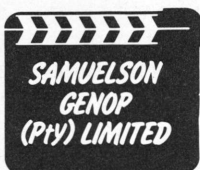
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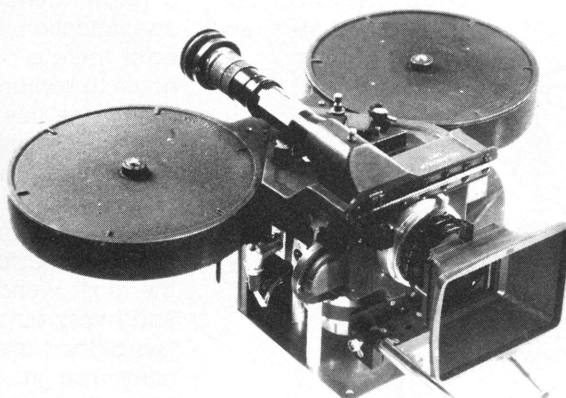


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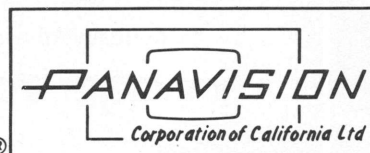
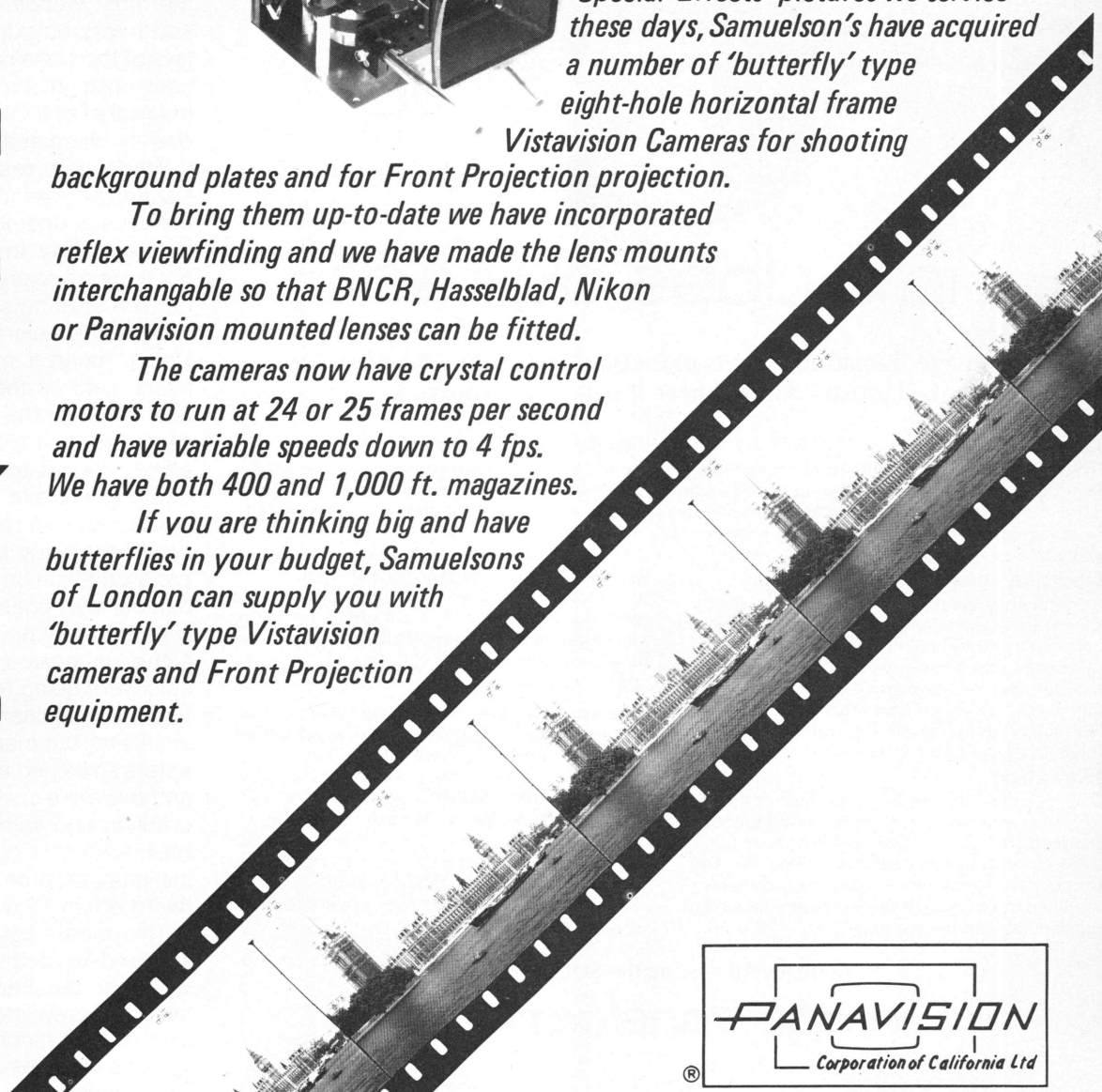
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When I returned from Albuquerque, the last location of THE GREAT MUPPET CAPER, the first big set for DARK CRYSTAL was already being built in the studio and one had to adjust very quickly from Muppet comedy to a totally new type of romantic fairytale. Although we had done numerous tests up until that time, I was still far from happy, nor indeed clear in my mind, as to what style the photography for the movie should take. I had a wonderful rapport with Jim and Frank but I felt, and I know they felt, that I still had not come up with the complete answer to the visual presentation of the movie.

I then remembered the 'Lightflex', a device that I had used on a previous movie of mine in New York. It seemed to me that here was the total answer to many of our problems. Here was a way of taking total reality out of the movie and instituting a type of fairytale photography which was so sorely needed and which I had not thought of until that moment.

The Lightflex is a device whereby color overlays can be laid onto images while they are being photographed and is at the total command and control of the cinematographer. I could increase or decrease the color effects as I so

wished. I could change the colors scene by scene or indeed during the course of one scene I could change color without too much difficulty. I had further consultations with Brian Froud, Harry Lange, Jim Henson and Frank Oz, and we agreed on a pattern of color overlays for the entire picture. These were carefully tabulated and prepared by my assistant, and with this careful preparation we were able to use the Lightflex without causing any delay in the shooting schedule.

The picture opens with Jen living with the Mystics, his foster parents, in a warm, friendly atmosphere of love and affection and the predominant color there is gold. As Jen leaves his home to venture towards the Skeksis Castle, he has many encounters on the way in different locations and each one of these was given a color suitable to the design. For example, in the swamp, where he meets Kira for the first time, this very large set had the most wonderful shade of green, and I very quickly learned that overlays of the same color as the predominant color in the set give the most magical effect. Consequently, a green overlay was used in the swamp.

When Jen reaches the Skeksis Castle and attempts to gain access to the Crystal Chamber we resorted to a purple overlay. In addition very large numbers of colored filters were used both on the lamps and on the camera. When using colored filters in this way I have found it most effective if the filters used on the camera match, or nearly match, the filter on the lamp. It seems to give a translucent magical effect which is exactly what we were trying to achieve on many occasions in the movie. I cannot remember exactly how many filters were used on the production but let me say that the number was considerable.

In the early planning stages of the picture it became clear to me that the sets were going to be very large. Our two principal characters were only 39 inches tall but many of the other characters stretched as high as 7 or 8 feet and therefore scale was going to be a problem and with it, depth of field. I realized that I had to set myself a minimum stop of T4.5 but hopefully I might attain T5.6 or even T8.

This meant lighting in a very high key and by dint of some very hard work on the part of my wonderful electrical crew, this was made totally possible, and indeed for me, an easy task as other people did most of the heavy work.

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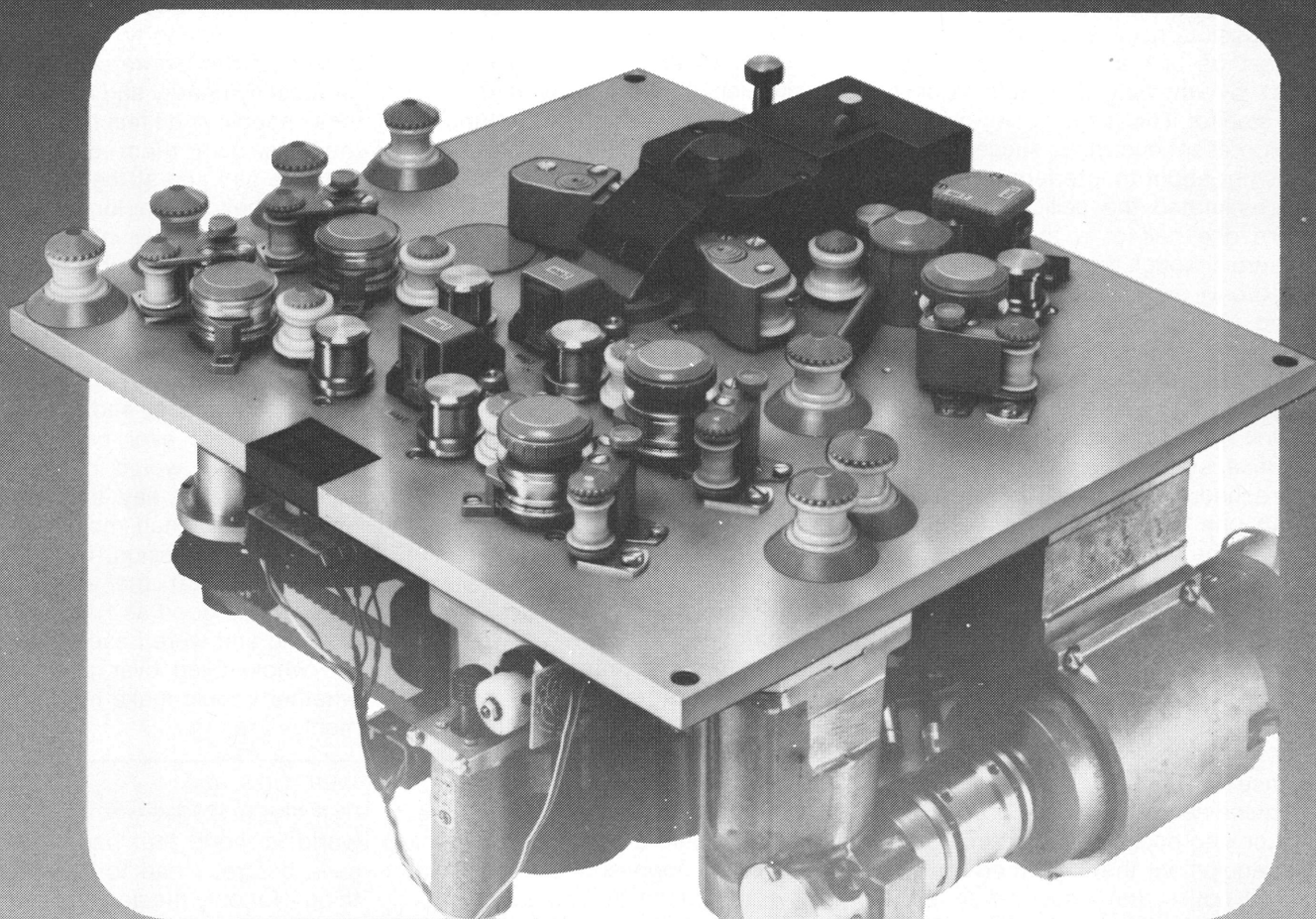
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Throughout the entire picture we used a pellicle reflex mirror on the Panaflex camera, in place of the more normal spinning mirror. This was to eliminate flicker and give the very best possible TV picture through the camera viewfinder system which was an absolute necessity right from the outset as Jim and Frank can only work by watching their actions on a TV monitor. This is the background to their present enormous success and I was not about to interfere with that.

I estimated the pellicle would require one half of a stop more exposure although the particular one we used only extracted 30% of the light used. You can see that this added to the lighting requirements, but nevertheless I understood perfectly that this was a 'must' as far as Jim and Frank were concerned.

Because the sets were so big, and the schedule demanded that we move from one big set to another, either during the day or possibly overnight, it was often necessary to rig two big sets simultaneously. This of course, stretched the resources of the electrical department in a way that I have never known to be required before, but I must emphasize that this was not careless planning or extravagance on anybody's part, it was a genuine necessity for the production.

Looking back on the list of electrical equipment that I used on the picture I notice that I seemed to avoid using Brutes at any time on the movie. My reason for this was that Brutes have to be trimmed after approximately forty-five minutes of burning time. With people dressed in these most extraordinary costumes it would have been a grave fault on my part if I had caused any delay while a lamp was trimmed as they were showing signs of great discomfort working in cramped, confined conditions.

In place of the Brute I used the new 24x1000 watt quartz 'Dino' Lamp which has not long been used in this country. These lamps, apart from giving out a tremendous amount of light, can also be flooded or spotted at will and filters and diffusers, on very large frames, can be used as well. Furthermore they can be put on dimmers. I have nothing but praise for these lamps; I think they are a great step forward.

On the big sets basic overhead soft lighting was achieved by the use of 6kw quartz overhead space lights with white silk skirts. These lamps, in

large quantities give a very soft, shadowless overhead light, which again, I find invaluable.

Some of the sets, of course, were quite the opposite. They were so small it was not possible to get a camera inside, except perhaps the Panaflex stripped to its barest minimum requirement.

In order to make our working lives tolerable in these small sets, most of them were built on four foot rostrums with removable floor sections so that the working crew could at least get inside them and stand up for their working day rather than have to be on their knees for hours on end. It was in those sets that I realized fully how versatile the design and potential of the Panaflex camera is.

On previous anamorphic pictures with which I have been associated, it has generally been the custom to use no more than three fixed focal length lenses, but on *THE DARK CRYSTAL* I think I am right in saying that we used almost every focal length available from Panavision from the 30mm to the 800mm.

It has been a year now since the principal photography finished on *THE DARK CRYSTAL* and that time has been taken up by the enormous volume of complicated technical special effects work that the script required. We had a special effects unit under the supervision of Roy Field, with Paul Wilson as director of photography, and their work had to dovetail into the shooting of the first unit. Conversely we on the first unit had to bear in mind that miniatures, models, painted mattes and optical overlays were all going to be added to certain scenes that we were photographing and this required close cooperation between the two units.

To avoid any misunderstanding, we made it a hard and fast rule that when any shot was being made by the first unit, which was to be supplemented or altered by the model unit, one of the key technicians of that unit was standing by the camera all the time. I well remember the errors I personally would have made had this person not been present.

Throughout my working life I have felt it to be very important that I follow the picture through to the answer print stage by keeping in close contact with the laboratory. This picture was no exception. I have run the cutting copy with the laboratory graders (timers) on two occasions and have followed the creation of the final

answer print at every stage of development.

I have very strong views on this. It seems a pointless exercise to me to spend many weeks endeavoring to create effects on film only to see them misinterpreted, through no fault of his own, by somebody hidden in the depths of the laboratory. I have the greatest sympathy and admiration for these people and I feel that I owe it to them to give them as much assistance as I can at the answer print stage. They are a lonely group of people, desperately in need of help and assistance and it would be an exercise against my best interests were I not to make the effort to attend these laboratory screenings.

*THE DARK CRYSTAL* is probably one of the biggest and most difficult movies I have ever been asked to photograph. I would be misleading you if I did not say that during its making I have had moments of despair and depression, but on reflection I feel that the end result is probably as good as I am capable of creating and were I ever asked to do the whole thing over again I doubt whether I could make many improvements. ■

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#### *DARK CRYSTAL*

*Continued from page 1285*

world, a world that had never been seen before. I had to design everything. Not only the general look of the world, from skies to the landscape, but down to the smallest detail which included things like knives and forks, pots and pans, the everyday minutiae details of the creatures that lived in this world.

"In theory, when you are given total freedom to design a new world, a world that has never been seen before, you think you can create it in a totally different way than our world is, that one could design skies that were different in colors and landscapes that look totally different from a landscape we have in our own world.

"In practice, it doesn't quite work that way. For instance we decided that this world, the world of the *Dark Crystal*, would have three suns. This was a very nice conceptional idea, but if we carried it through logically it became a problem because it would mean there would be three shadows. This was almost impossible to film because it would be very confusing.

"If skies were designed a certain color what would that mean to the colors on the landscape? I think the



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danger is that things would look too alien, you have to make the world accessible. It has to be what I would call familiar. I think what I did was to assimilate an English landscape into a fantasy world.

"It has a reference to other landscapes in other countries—I think there is a lot of the American landscape in this film—and yet, really I took it from where I live, which is in Devon. I tried to create a world that was timeless, and in doing so I think I placed it at once in the past and also in the future. There are a lot of historical references that cannot necessarily be pinned down so you never know quite where this world is or what its time period is supposed to be.

"I think generally I look backwards, back in time for my major references because personally I believe that fantasy is partly nostalgic. Even future looking fantasies, like STAR WARS, to me seemed to be dwelling on things that are myths, and it is just an old story transcribed into a future setting.

"I suppose in creating a world like we did, we had a role that was very similar to God, but we very rapidly found that God had all the best ideas already. It is really difficult to improve upon nature and we did spend a long time in fact looking at a lot of natural history films to look at movement and different designs of creatures.

"I did a lot of research for the film, because we had to create a whole world, a whole system that worked, I looked at a lot of different cultures across the world and took various aspects from there and assimilated them, hopefully, into some cohesive whole.

"I think in doing the research I found that every system, every different religion and every culture is based on the same essential truths and hopefully, if this film can put across anything, it is saying that we are all the same, we all live in the same world, we all feel the same things, all our different religions are saying the same thing and hopefully we can achieve out of the conflict we have at the moment some sort of harmony. I know that sounds very heavy, I do genuinely believe, looking back on retrospect of what we have done, that that is the way it went."

Froud worked with Henson and his group in New York for two years before the operation moved to London. Once their ideas had developed to the

point where they had a storyline, David Odell began working on the screenplay. As the designs for the creatures were refined, a small group started working on the realization of Froud's drawings as puppets. The first step was to sculpt a model of a creature in clay, and then the sculpture was used as the basis for constructing a working prototype of the puppet. When the production moved to England in July of 1979 (so that

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*In creating a world we  
had a role similar to God,  
but we very rapidly  
found that God had all  
the best ideas already.*

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Henson could simultaneously supervise the production of first "The Muppet Show" and eventually THE GREAT MUPPET CAPER) the "animatronic fabrication group" grew from seven to 60 people.

The creative supervisor of this group was Sherry Amott. "My job was to get the ideas from Jim Henson, Frank Oz, and Brian Froud, discuss them with Brian, and then identify and find someone to do it," she says. "I had to depend very heavily on the input from the puppet-makers we brought over from New York as to how they thought things should be fabricated. I would have to understand the whole process before I could pinpoint what we were looking for. I looked in places where you wouldn't expect puppet-makers to be. I looked at jewelry makers and watch repairers to be mechanical designers; dollmakers and pottery and ceramic majors in art school became our best mold makers. I was looking for people with a whimsical inventiveness combined with an interest in, say, pottery and electronics, or working with fabric and carving wood. It was the combination of the various skills and interest that strengthened the group enormously and made it flexible. Also, it avoided having extraneous people doing only one thing."

When a clay sculpture of a creature was completed, a mold was taken from it and used to produce a flexible latex version of the creature. Wendy Midener-Froud, one of the sculptors on THE DARK CRYSTAL, describes how the idea of using latex foam for the puppets' skin developed in the course of making a prototype for Jen

and Kiri, the Gelflings who are the central characters:

"The first 'head' I had was a hard latex under-structure with a chamois leather skin over," Wendy says. "It looked interesting and was a nice texture but it didn't move enough. In the beginning we didn't know whether the creatures were going to be able to do anything, but I think it was Jim who heard of using latex foam and Dick Smith came in and worked with us for several weeks." (Dick Smith is one of the top make-up specialists in this field and was involved in such films as ALTERED STATES and LITTLE BIG MAN. Stuart Freeborn, who created creatures for STAR WARS and THE EMPIRE STRIKES BACK, also gave help and advice in this area.) "Then I went off to work on Yoda for THE EMPIRE STRIKES BACK and that was the first time anyone had used a total latex skin for a puppet, so he was an experiment for us in this film."

Tom McLaughlin, head of the of the foam lab for THE DARK CRYSTAL, estimates that four tons of latex were used by the lab for fabricating the puppets, and each character in the film required slightly different characteristics in the foam. A great deal of experimentation was done. "We came with some things I didn't think possible," explains McLaughlin. "Like getting a highly plastic foam without the addition of oil. Oil is a plasticizer and has been used in the past to make things more flexible, softer, but oil in any piece of casting you are going to turn into a puppet will wreak havoc when trying to get things to adhere to it. This is something I came up with while working on The Muppets."

McLaughlin's work begins when the sculpt is completed. The heads, hands and feet, etc. are sculpted in oil-based clay and then sent to the molding department where a two-piece mold is made. This is returned to the sculptor who makes a core. "We stick clay in the mold which will be the thickness of the foam skin," Lyle Conway, one of the sculptors, explains. "We test that to make sure it is thin or thick enough to allow the mechanisms involved to move, then it goes back to the mold-makers and they cast a plaster core. The mold is separated and the clay peeled out, the foam is poured in and the core pushed in . . . the foam takes the place of the clay. This all takes two or three weeks depending on the com-



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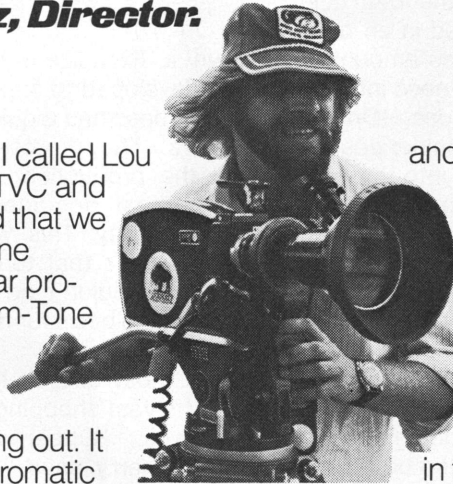
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plexity of the mold."

The foam lab work involves a battery of kitchen equipment as the foam is whipped in household mixers. "We do have a large industrial mixer for large body parts," McLaughlin says. "This can mix up about four gallons at a go." When the foam is in the mold it is then placed in an oven and baked. "We whip the amount of air we feel the piece will need into the mix," McLaughlin continues. "Once it is nice and smooth the molder pushes it, shoves it or shoots it into the various mold parts and we bake it for anything up to three hours, very much like a cake. We have seven ovens and during our busy time we would use them all, they were going 18 hours a day."

The creatures had to be lifelike, flexible, movable, and lightweight. They had to be easy to get in and out of, in case of fire, and also be able to accommodate a small video underneath which the performer could watch. "Before THE DARK CRYSTAL there had been a lot of big creatures built on backpacks," says Amott. "But this was heavy, and it was difficult to lift your arm to work the puppet. So we decided to build the costume on a harness, which allows

the weight to be carried on the hips.

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### *The most difficult item on Sherry Amott's shopping list was eyes.*

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"On Jim's suggestion, I tracked down a Steadicam harness, which was developed to support a Skeksis. The harness had a quick release for a camera. The prototype was taken into the production stage, and the mechanical designers turned out about twenty. This was an original idea of Jim's that turned into something we couldn't do without. It will become the basis for future puppets, I am sure."

The most difficult item on Sherry Amott's vast shopping list for the film was eyes. "Rubber was our biggest item," Sherry says, "but it took us longest to find eyes for the characters. They just don't exist. The eyes for stuffed animals that taxidermists use are half-round and come in standard types: lizard, dog, and so on. Then there are makers of artificial eyes for humans, which are generally cup-shaped to conform to the eye muscle. What we needed was almost

a sphere in order to have eye movement, and these had to be custom-designed. The size of the pupil was particularly important, as far as focusing the eye line of the puppet, since it is the connection between the eyes and the camera that makes the characters come alive.

"We went to the people who make eyes for Madame Tussaud's. They produced glass-brown eyes, very fragile and difficult to put mechanisms in. Because the process prevents you from controlling the pigment, you can't achieve special colors. Brian wanted red irises, and they couldn't do that. We also went to an artificial-eye maker. She started off quite well, but she had a lot of patients and felt she should really give her time to them, so we ended up with a company that makes artificial eyes. They had to be of a certain plastic that was hard and could be polished; milky-looking eyes don't reflect or look alive."

The adaptation of Froud's drawings into workable puppets was a process of evolution and compromise over several years. Knowing when and how to compromise, what limitations to accept in the movement or expressiveness of each puppet, was

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perhaps the most difficult aspect of the process. As Kurtz puts it:

"It's very easy to get into the King Kong syndrome, which is the need to be able to do everything and then you have it so complicated that it's difficult to do anything. We were always trying to balance a simple enough operating mechanism that four or five people could operate all the functions and yet complicated enough to give us the range of emotions that we needed to convey. After some testing on prototypes we rejected some ideas and accepted others but came up with, I think a good balance. Then a team of people was assigned to each creature with a primary performer, we call them, whose job it was to create the personality of the character, just as an actor would create a role, and then work with his team of people, whether it was two extra people or four it didn't matter, to then create the movement properly for that character in rehearsal.

"If they had any eccentricities or unique qualities that would be used throughout the picture then that had to be developed to such an extent that when they got into rehearsal for a scene they would all remember how the creature moved or how it turned its head or how it blinked or if it had a funny walk or any of the idiosyncrasies that a normal personality would have. They spent a lot of time on that aspect of the picture before we even got to the shooting stage."

The performers who brought to life the main characters and creatures in *THE DARK CRYSTAL* were drawn from the Muppeteers, but the Mystics and many of the other characters were created by a specially formed group of mime artists, actors, dancers, acrobats, clowns. Jean-Pierre Amiel, a mime artist well known in Europe, established this group of ten performers which complement Henson's nucleus of puppeteers.

Gary Kurtz recalls how the creatures came alive on the set: "The magic of the film for us, for me especially, was after all the rehearsal time and all those years of development to see the characters come alive on the screen and to have the film crew relate to them as characters although they knew they were being performed by all these other people. On the set in between takes they would talk to them as characters especially with some of the friendlier characters who were really pleasant to work with. They came alive be-

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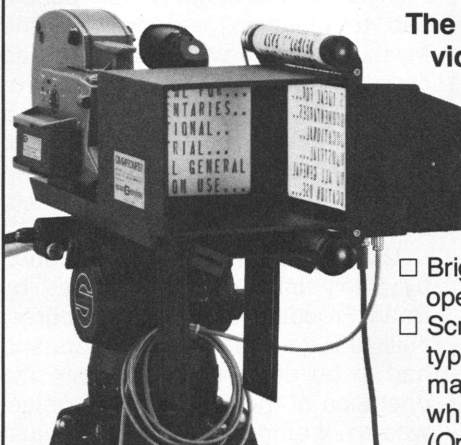
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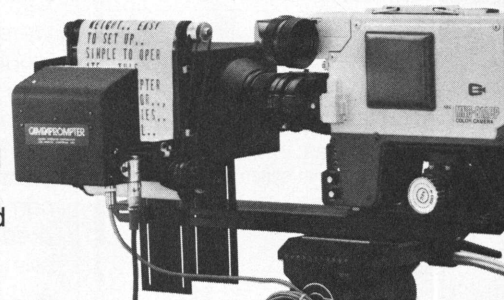
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cause of the diligent rehearsal of the performers who had worked on it so long that they were all anxious to see it turn out as well as possible.

"There were nine Mystics and nine Skeksis and we had to have enough people to operate the all at once because in several scenes you see them all on the screen at the same time. In the case of the Mystics, they are large enough to have people inside, sometimes two people, depending on what it had to do in addition to outside manipulation of various aspects of the character.

"So because of that we had very small video monitors so the people inside who were manipulating things could see what was going on or at least see what the camera was seeing, and that was a great help.

"The position that these people had to maintain, especially in the Mystics, was so difficult that we had about a four week training period of gymnastics just to get them up to a position they could do that sort of stretch and stand without getting cramps. It was very difficult for them but it worked out quite well.

The sets for the film were designed by Harry Lange from sketches by Brian Froud. They were, of course, built to the scale of the puppets and had to be designed to facilitate the operation of the puppets. The object was to photograph the puppets just as though they were live performers. The principal performers for each character actually spoke the dialogue during filming, although the production track was only used as a cue track for looping later on. The sets were built up off the floor so that there would be room for the performers and their gear underneath. "In the larger scene, says Kurtz, "where we had ten, twenty or twenty-five characters on the screen at the same time, you can figure there were at least a hundred performers that we had to hide somewhere. It was not always easy and sometimes it was a bit like Grand Central Station."

The key to being able to shoot THE DARK CRYSTAL effectively was a storyboard. Kurtz comments:

"We knew from the very beginning that the creatures were going to be limited in what they could do. So every sequence had to be carefully storyboarded and had to have six or eight months of work with several artists that went through them sequence by sequence and laid them out as the script indicated.

"We would study them and try to decide how we could meet those restrictions of the creatures. The storyboard artists were not concerned with the limitations of the creatures, they just drew them out and we worked on the sequence as if human actors were doing everything. Then, after we could put them up on the wall and see them all, we could decipher certain things that could not be done and would have to be shot in a different way to hide things. Then we would re-draw those storyboards so that we ended up with a sequence of what could be done shot for shot.

"Those were drawn before some of the creatures were finished so that we could incorporate some of the ideas about certain things that had to be functional on one particular creature that might not on another, but even that wasn't always enough.

"We did some rehearsing on video to test whether the ideas worked or not because in a lot of cases facial expressions and eyes were the most critical thing to bring life to the character."

In one sense every scene in THE DARK CRYSTAL is a special effect because of what was required to make the creatures appear alive, but in addition to the puppet work there were special mechanical effects supervised by Brian Smithies and special photographic effects supervised by Roy Field. Kurtz obviously brought to the picture a strong background in special effects and he describes the approach to the effects on THE DARK CRYSTAL:

"We started with special effects very early on. We knew we would have to have some miniatures, some matte paintings, a lot of optical composite work and some blue screen work. We did a lot of storyboards for the art department of the technical shots. We decided to build the Dark Crystal Castle in two miniature sizes, one about 10th scale and one about 25th scale so that we could build a fairly large landscape over Stage 7 with mountains and terrain and put the castle in the middle. Because we had 'power surges' as we call them coming along through cracks in the ground, we had to photograph multiple passes on the miniature and where we decided to photograph the landscape in lightning flashes we had to photograph slow time to get a proper exposure. Sometimes there were four or five passes through the camera before that aspect of the min-



ature was finished and to that we would add the sky which was mostly done with a cloud tank. We spent several weeks doing cloud tank skies, various kinds of stormy skies and clear skies all slightly weird in coloration and cloud formation just to make the world a little more unique.

"We had several matte paintings which were executed by Industrial Light and Magic in San Francisco and for that we provided, in most cases, foreground elements. We were going to shoot some of them on VistaVision but decided that for this purpose, as they were long distance travelling shots and most of the elements would be matte painted in, we could get away with using Panavision foregrounds. We did and they worked out quite well, although I normally prefer to use VistaVision for the elements. In this case it was easier for I.L.M. to composite the material because they were doing other work at the same time with their VistaVision printers.

"In addition to the matte paintings we did several key miniatures which were matched in with live action foregrounds and with cloud tank skies. We also did some composite work, which was very unique, in that we did some superimposure of creatures

that were matched into position with some special holdout mattes that gave us a slightly ethereal feeling.

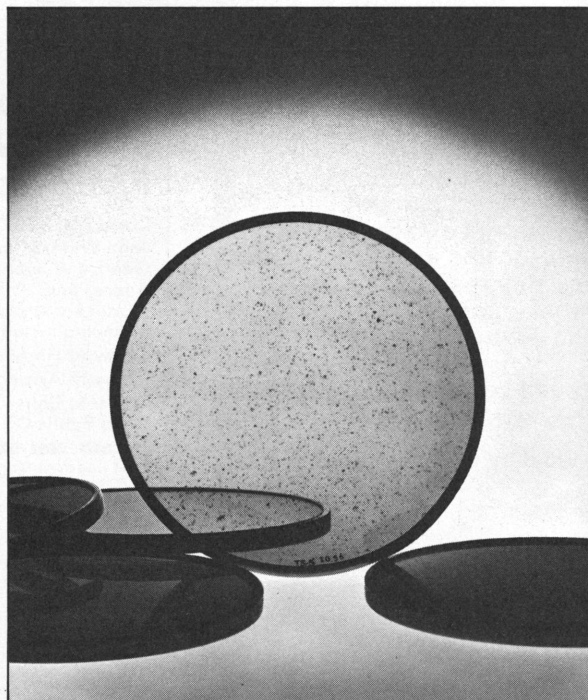
"We have a sequence at the end where these creatures have to be very translucent and glowing, and they were done by shooting the original elements against black velvet and then matting them into a miniature of the crystal castle rooms. The crystal shard hanging in the centre was a separate matte element so we ended up with sometimes seven, eight, nine, ten, elements with all these creatures in this room, each one photographed separately and put together in the right perspective, which was a real chore. We were able to use video quite effectively all through the picture, especially with the special effects, but because it won't line up exactly right its not the same thing as putting a punched frame in the aperture. It did allow us to see a rough mix of the vague positions of the elements in the frame. We could play back the first element that had been shot several weeks before and mark on the video monitor with grease pencil the approximate position of it and then put in the new element live on the floor and look at the two video taped together and see if their position in

the frame was close enough. It was good enough for lining up purposes for our shooting because as long as the images did not overlap and they could appear to be talking to each other we felt we were fine. We built a special video set-up for this picture which was completely portable and had two U-matic recorders, a switching network and a special effects generator incorporated so that we could insert a picture from one camera into the image of another. If the Panavision camera was shooting a fairly wide picture and one of the performers wanted to see an eye movement, we could have a band of Panavision in the top and bottom of the picture and insert a close-up of one of the creatures in the center. We could put up to three or four cameras if we wanted to and record that as a master. Sometimes we had 25 monitors on the stage at one time.

"In addition to the miniature of the exterior of the castle built in a landscape, which were fairly straightforward, we had the interior of the crystal chamber in which for the climax of the film, the stonework was to fall away to reveal the crystalline structure underneath. The way in which it is done is the full size set,

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which had to match, was photographed quite carefully and then smaller pieces were made, and various small bits, then attached to the perspex crystal room that had been built up previously and lit from behind.

"The only way we could get the stonework to fall away effectively was to shoot at very high speed, so we brought in a 360 frames per second camera to shoot the falling away and set many many explosive charges all around the plaster stonework so that it would fall apart in small enough pieces for this scale to work. We had to try it several times

with wires running all over the stage to get the sequence of explosions correct and make the stonework break away because it could not look like an explosion. It had to look like an earthquake collapsing the material and so the explosions had to be very very small just to jar the attachment points loose so then the material could break away and fall on its own.

"That was probably one of the more complicated of the interior miniatures. We had to use that same crystal chamber miniature for the interior set for the very end of the film because there was no full size set

built of the crystal interior, that was all in miniature. The characters were all shot either against blue screen or black velvet and had to be properly placed in that miniature background by the perspective indicated on the storyboards so those shots were analysed and lined up very carefully.

"The video was also a great help there because it gave us a better idea of what the proper perspective would be. We could run the background and look at the perspective on the foreground and see whether it matched up reasonably well.

"From an overview of the picture the biggest challenge was to shoot the film in such a way that none of these things were noticed. The actors moved where they had to move and said what they had to say and presented the drama in such a way that you would assume that they were just regular performers, and I think to a great extent that was achieved. We had certain limitations, certain scenes we had to cut around, things that didn't quite work, but for the most part I think all the scenes come across as fairly normal scenes and if human actors were being used they would have had been shot in pretty much the same way and that's really what we were after."

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exterior in the original size (240 feet long). In addition a 40 foot, 1:6 scale model, submersible and remote controlled was built for running shots in the ocean, during the storm, and for front projection plates. One 20 foot, 1:12 scale model was built for all underwater filming and, finally, a 10 foot model (along with various destroyers, tankers and other ships) were made for special effects photography.

After a long period of pre-production, shooting began on the North Sea Island of Helgoland in March of 1980. Here we expected to shoot all the high speed running shots with the 40-foot boat, and all storm scenes. For the front projection plates we needed the front and rear end of the boat within the shot so that we could combine them later, in the studio, with the bridge and the actors on it. The small scale model of the boat thus required high speed filming in the range of 50-100 frames per second. Magazines had to be of 1000 foot capacity as the boat had to return to its harbor and be lifted out of the water by crane for each magazine change. Unfortunately, there was no

existing 35mm underwater camera that could do all of that, so we had to build one ourselves.

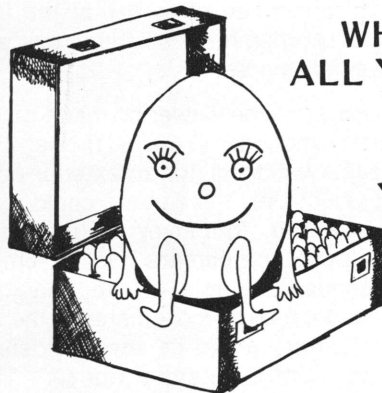
Gerhard Fromm developed an adapter which allowed us to use the coaxial 35BL magazines on the Arri 35-3. This kept the camera and the underwater housing, which he also created, very compact. Naturally, all functions were remote controlled by radio. Two such cameras were mounted on the 40 foot model which, considering the impact of the waves, was not a simple task especially since for front projection we could not have any image vibration.

For the storm scenes we filmed in actual conditions with wave heights up to 15 feet. The boat was extremely sea worthy and even though it was submersed up to 30 seconds, it always emerged in the correct position. All of that with big cameras mounted to its sides! As you might imagine, the tension was great after every shoot until we got the report back from the lab that every thing was okay, or, as it also happened, that it was not. For the camera to tolerate these extreme stresses, with 1000 foot magazines and up to 100 frames per second, with waves pounding it like giant hammers, I can only congratulate Arriflex

and of course, Rolf Zehetbauer who built the boat.

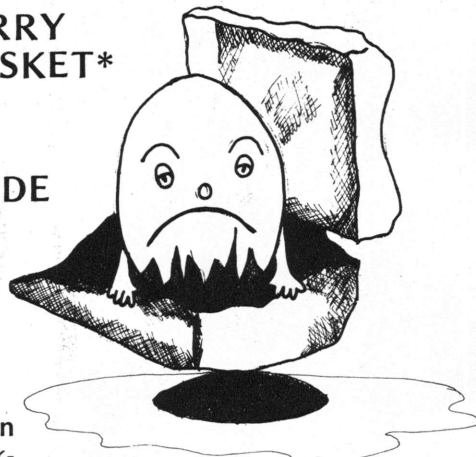
A further problem arose with the long shots where we used remote controlled dummies on the bridge instead of actors. The elevation of the camera over the waves had to be the same as the elevation of the bridge of the model boat over the water, i.e. 1 to 2 feet above sea level. During the storm scenes therefore, the camera as well as the crew was constantly swamped by waves. To accomplish these takes, a large hole was cut into the side of the camera boat. With the camera looking through it, lying on the floor of the boat Peter Maiwald and I, both in diving suits, life vests and strapped down, were constantly gasping for air in between the waves. During all this we had to keep frame on the model U-boat using a focal length of around 200mms. A considerable artistic feat, but not unusual in our profession; and this was only pre-production.

An additional problem encountered was the constant splashing of the front glass of the cameras. Normally one could use a rain deflector, a high speed rotating glass disc which throws the water off through centrifugal force. However because of the



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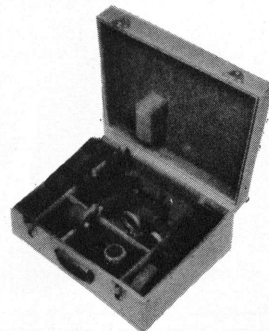
Participants were invited to package 24 off No. 1 eggs by any method of their choice within an 18 in. cube. The containers were then dropped from a height of 50 ft. onto the playing area of the White City Stadium. All 24 eggs within the Samcine Case were still unbroken after the fall and only minimal damage to one corner of the box occurred.

N.B. Not one of the other eleven entries survived this rigorous drop test.



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impact of the waves these deflectors were immediately destroyed, so that only one old remedy was left. The front glass, on the outside, was coated by rubbing it with a green apple. This reduces the surface tension of the water for some short time so that it can run off without causing any bubbling or tracing. By the way, this can also be done directly on the front surface of a lens. There was also the problem of condensation on the front glass which, in water this cold, cooled very quickly on the inside and had to be heated or pre-heated. So, as with almost every film, there were surprises and new opportunities

to pay one's dues.

They were not easy weeks on Helgoland; but the results were important as these shots were the highlight of the film. In earlier American screenplays these scenes didn't even exist because neither John Sturgess nor Don Siegel considered them possible to make. In July 1980, finally, the main part of the production with actors started in Studio 4 and 5 at Bavaria Studios in Munich. There, the interior of the boat was our home for the next 8 months.

The set was a reconstruction of the interior of the boat, made to actual size and accurate to the minutest

detail. It was 240 feet long and varied between 8 and 15 feet in width. The construction was of steel, sheet metal and wood, and it consisted of 5 segments representing the 5 compartments of the boat which were separated by the typical round doors with heavy steel locks. Most of the components and interior apparatus were gathered together from museums around the world. The narrowness inside the boat is hard to imagine. Here, during the war 50 people had to live, work and fight for months at a time. This is what now also awaited us. The passage ways in the boat were so narrow that only two people could barely pass each other. In this environment, without removable walls, we had to find camera angles.

All natural motions of the boat had to be duplicated with the entire set. For this, the entire set was mounted on a 17-foot high platform with a hydraulic system to move the boat on its longitudinal and perpendicular axes up to 40 degrees. With this all motion, such as storm scenes, diving, etc., could be simulated. A digital computer allowed this platform and its motions to be pre-programmed. After some initial difficulties this system functioned so well that the first seasick members of the crew and cast left the set.

How can the viewer be made to feel these motions since a U-boat has neither windows nor an exterior point of view? Only the camera could relay this feeling. To convey the motion of the boat, the camera had to remain reasonably stable on an imagined horizon, thus all movements of the set and actors would be seen as deflections from the natural horizon. This would have actually required the use of a crane or similar stable platform which could have entered through an opening into the boat from the outside. Due to the physical confines, however, this was impossible. On the other hand, the camera also had to be extremely mobile in order to move around obstacles and people inside the boat. How could these two seemingly paradoxical requirements be met?

The solution was a gyro-stabilized hand-held camera, a similar version of which I have used for many years. In Germany, the separate function of the camera operator is nearly unknown, and most all cameramen operate their own cameras. Therefore, it



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was my job to be adept at controlling the "stubborn character" of a gyro which resists attempts to have its axial direction moved in space. As with a Steadicam, practice is at least as important for successful results as the unit itself. For this film, two stabilizers were crossed with their effective axes so that all motion around the optical axis, i.e. the imaginary horizon, was controlled by both stabilizers, whereas the other two axes, i.e. pitch and pan, were controlled by only one gyro. (The Kenyon stabilizer is an electrically driven, high speed gyro operating in a vacuum housing). Fortunately, due to the noise of the hydraulic platform we could not go for original sound anyway, so it allowed me to use a lightweight camera.

The lightest one, the ARRI 2C, has only a horizontal finder system at the lens axis, and in many cases I would need a low camera position with a finder that allowed viewing from the top. Based on these requirements and with my input, Arnold & Richter, manufacturers of Arriflex cameras, virtually built a new camera for this film. Using the ARRI 2C movement, the entire movable finder system of the ARRI 3, and the new smaller central housing with only one fixed lens receptacle, they created the ideal MOS hand held camera. With the finder extension I was able to accomplish low camera angle shots virtually starting at floor elevation, but with the operator standing almost erect. Together with a remote controlled focusing device which I designed with the help of Alfred Chrosziel, the requirements as far as the camera was concerned, had been fulfilled.

By now the new problem was that the hydraulic platform was functioning so flawlessly that actors and crew had a hard time keeping their feet on the floor during storm scenes. How could I stabilize myself holding the camera during a shot without breaking every bone in my body? So, back to more practice, and a crash helmet, guards on arms and legs with bandages in between. Soon I looked more like a football player than a cameraman, but I was getting the situation under control. I also had to get used to keeping both eyes open while shooting so I could concentrate on the composition in the finder as well as anticipating my surroundings better.

The most memorable camera move of the whole film, is, of course, the continuous run through all five com-

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partments of the boat, through all airlock doors, without a single cut. I have heard an unending number of speculations about how we accomplished it. The explanations range from retractable rails to overhead cable runs. Also mentioned was the possibility that the camera was handed from person to person, from compartment to compartment. The true explanation is in fact the simplest, but nobody had thought it possible, including the director and myself. After we had seen the interior of the boat for the first time, we had an instant desire to have one long continuous shot that would go the full 200 foot length of the interior of the boat. This thought was so powerful that we could never quite dismiss it. As I got more and more familiar with the interior of the boat and the controlling of my special camera, the thought re-surfaced and we made our first running attempts during other scenes. First only through one of the air locks and slowly. And then, after a while, suddenly it worked. As time went on we got braver and faster, and after two months of shooting inside the boat the time had come to revive the old idea. The procedure was to "simply grab the camera and run." Sometimes we cleared obstacles by fractions of an inch, sometimes we didn't. But all the scrapes and bumps are healed now, and the Arriflex also once again withstood the punishment without major complaints. First I had tried to mark my steps precisely, but that never worked. Only after I started to run without thinking and planning did it work out properly. This surely had lots to do with instinct and concentration, but I'm sure equally as much with desire.

The limit to hand holding the camera finally had to be recognized during the scenes which included depth charge explosions and extreme storm situations. As the actors on the set, on top of the platform, held on for dear life (big stars would not have subjected themselves to such torture) the cameramen had to think of new approaches. By now, the set had been separated so only the backgrounds were mounted on the platform which, with this reduction in weight, could accomplish more violent movements. The camera was mounted separately in front of the set, also on the hydraulic platform but able to pan. It was horizontally stabilized through a long pendulum that reached down to the studio floor. With



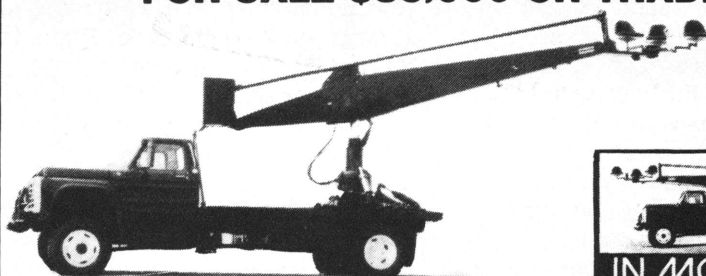
the pendulum the camera platform could be set in motion countering that of the main platform, thus exaggerating the apparent movement of the boat. These scenes were shot with multicamera set-ups since the action within the boat was not totally predictable and changed from take to take.

The same set-up was used for depth charge simulation. Here the entire platform was allowed to actually bounce on its support pillars with a full force so hard that the welds on the set started to break. It was an inferno also in terms of noise. To enhance the effect, tripods were mounted on rubber elements which prevented the most severe shocks from reaching the camera but made them vibrate at a different frequency than the set, thus adding to the effect of the explosions. Video adapters on all cameras allowed us to judge individual takes instantly. In the middle of this already crazy environment, our special effects team under Charlie Baumgartner created fire, explosions, and gushing water leaks, one after the other.

Very difficult and very trying for both crew and cast were the sequences in which the boat hits bottom off the coast of Gibraltar and lying on its side, starts to take on water. For this, the set was moved to a large tank which was slowly filled with water. Water spouted and gushed through all openings, and the actors spent the next few weeks up to their necks in water, and unfortunately, the camera crew as well. The Arriflex also got more than one involuntary bath, since the only thing that could be done to protect it was to wrap it in a plastic foil. By this time, everyone on this film, whether in front or behind the camera, started to understand the stress, the fears, and the claustrophobic feeling these crews must have endured during their missions.

Important to the filming of *DAS BOOT* was the design of proper lighting. Basically, within the boat, we worked almost exclusively with the original light sources according to the original lighting plans of this type U-boat. Of course, those were designs specifically in line with the boat's limited energy supply while operating underwater. Each source was very meaningful in its specific placement. This original, basic lighting plan was only modified to the extent that we equipped the sockets with, appropriately higher output sources. Only dur-

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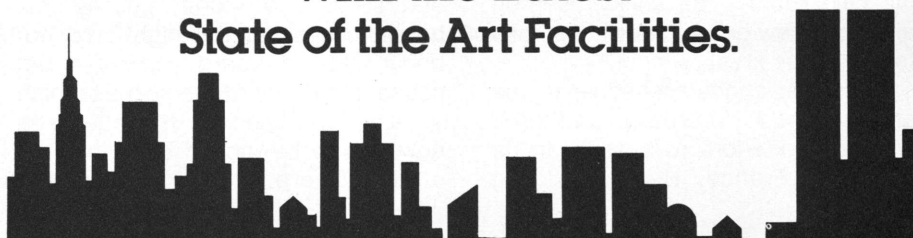
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ing close shots and in special situations did we resort to additional lighting. Whenever the script called for electrical failure, the flashlights were activated. For this we had built special flashlights with 70 watt quartz bulbs and replaceable nickel cadmium batteries. Here again we used no additional lighting, and the light cones thrown by the flashlights in the expended air of the boat interior added to the dramatic look. The various colors of the interior lighting were not our choice either. They were original and had distinct functions subservient to the needs of the boat. Red was the light for general alarm as well as the night light when the tower was occupied. (Eyes adapt quicker to darkness when they come out of red light). Blue was the light used for electrical failures and as night light in the crew quarters of the boat. Smoke, and its related difference in colors, was also a functional part of the design, such as the exhausts in the machine rooms, the sticky used-up air in the crew quarters, or the smoke from various fires.

Even the longest schedule in the studios ends eventually, and next were the exteriors to be shot in La Rochelle, France. Here, the "big

boat" awaited us, also a creation of Rolf Zehetbauer, true to the original exterior and 240 feet long. Of course this was only a U-boat in its over-water structure, and the entire set was supported by a metal frame mounted on floats driven by three engines with a total of 800 horsepower. With this boat we were planning to shoot the opening scenes in the U-boat bunker, the shots in which the boat leaves its home port, and all exterior boat scenes involving actors during calm sea conditions. Finally, we planned on shooting its homecoming and subsequent sinking when it was hit by bombs shortly before entering the safety of its bunker. Six camera crews and more than two tons of explosives gave the boat its final send off to the bottom of the Port of La Rochelle, which now looked as it must have looked 35 years ago during the war.

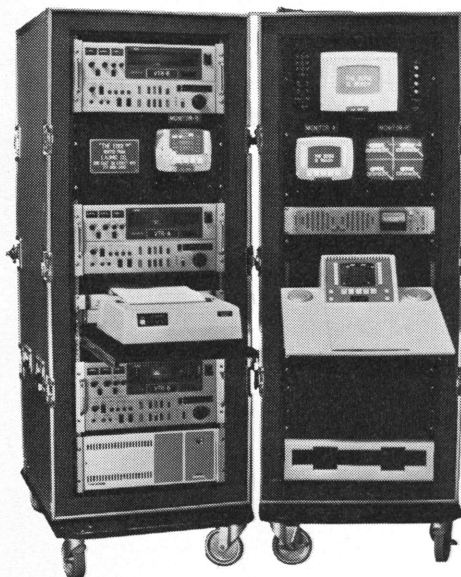
Unfortunately our film boat experienced a similar fate in that it broke up and sank in a storm. Luckily this happened during the night and nobody was on board. However, because of it many of the scenes which were to be filmed on the open sea now had to be moved back into the studio. There, a second conning

tower with command bridge had already been rigged in front of a 70 foot front projection wall. Nothing was easy on this film. For these shots in the studio, the bridge was inundated by huge amounts of water coming from a special chute in the studio ceiling, as well as from pumps and firehoses from all sides. The actors on the bridge literally had more water than air to breathe. The front projection behind the bridge, however, had to be absolutely dry during all of this. It therefore had to be the set, which created problems with depth of field. There, Fuji 8518 with its 250 ASA rating, allowing for the extra stop, was the salvation. Use of indirect lighting was also made possible by this.

Most difficult was the timing of the water effects. Each wave on the background projection had to continue to the foreground in exact sequence without anyone in the studio having the benefit of seeing the background. To time this properly, we had set up a large clock with a second hand, and it marked the timing of each water effect. The clock was coupled with the projector in both forward and reverse, and the video adapter on the Arriflex camera was able to show us the combined results.

In many of these shots the boat is a combination of foreground set and background projection. The bridge with the actors, for instance, stood in the studio, whereas the stern or stem of the boat was projected from footage with the miniatures shot off Helgoland Island. So that the composites of the shot did not move in relation to each other, the camera had to be mounted in a stationary position. However, since a boat in a storm is not stationary we had to give the illusion of motion again once the set was combined with front projection. To do this we designed a support for the front projection camera to enable it to be moved on all three axes, including around the optical axis. All of it, of course, had to remain in the nodal point. With the use of the video finder, the camera could thus be moved freely to follow the motion of the horizon in all directions. The result was a boat moving naturally in the waves, as if it were filmed from a helicopter. All background plates were done in 35mm full frame; a larger format was unfortunately not available. It is a tribute to the precise and excellent work of Bavaria's laboratory, that in spite of it one cannot

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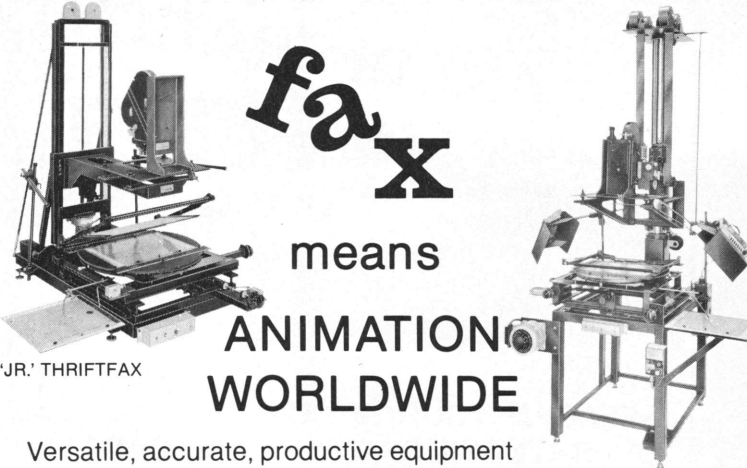


tell that the backgrounds are already second generation.

In the meantime, at Bavaria Studio's tank the 20 foot model built by Hans Nothoff was being readied for all underwater work. Here too we had to deal with many difficult problems because of the complex movements of the boat. Gill Woxholt, BSC, with his crew, had to work underwater on tracks and with a jibarm. Again with the video finder image I was able to coordinate this from above the surface. An added problem here was the fact that the underwater visibility had to be coordinated with the 1:12 ratio of our model boat. This resulted in an 8 to 10 foot visibility for our crews which made working extremely difficult, but resulted in a realistic visual scale conveying the size of the boat accurately. At the same time, Ernst Wild was shooting all the miniature special effects with our smallest boat model, the 10-foot one. He generated all the scenes in the Port of Vigo, the attack on the convoy, the burning tanker and its shipwrecked sailors as well as the dramatic run through the straits of Gibraltar and the attacks on the boat. Finally, at the very end we shot the opening scene of the film, the celebration in the bar the evening prior to their mission. This was shot in the studio and was perhaps the only scene in the entire movie which we were able to film with conventional approaches, and without all the difficulties and problems that followed us through 18 months of production.

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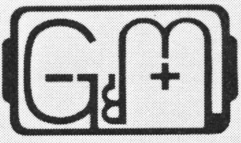
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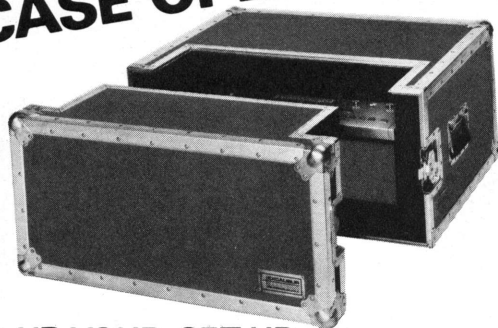
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FAERIE TALE

Continued from page 1298

Frawley explained, "For one thing, the scenes are not overlit. I encouraged Klages to use available light whenever possible. We designed shots to take advantage of the extended take. Many times in video, because you're working with a two or more camera shoot and shots are available, you tend to use them. You get sort of a 'cutty' look to your production. We also used more interior-to-exterior cuts, which I think of more as a film technique."

Frawley described his impressions of the differences between film and video now that he was well in to the post-production portion of his first video undertaking. "The relationship to the camera operators is different. There is more participation by them because the process is more fluid, the tape is always rolling and the camera people have more responsibility as a result. They 'discover' shots in a way sometimes. The video shooting process also seems less intense than film shooting in some ways. There's less of the pre-set-up of shots, a process which makes the film camera operator pretty much someone who is carrying out the directors' bidding, set in advance.

"I love the video editing process, and plan to workprint my films on tape from now on if I can get my producers to agree. It's fast and economical."

Frawley also sees that speed as a creative boon. To his way of thinking, the quickness allows editing a sequence without losing sight of the show as a whole. The example he gave was a musical number from THE MUPPET MOVIE, which might take a week to cut. By the end of that process, a week on just one sequence, it was necessary to go back and review the film as a whole, to refresh yourself on where you were in the production as a whole.

"Besides," he continues, "on tape you can cut something three different ways, put it in the computer, look at all the versions, decide which moments you like from each, and arrive at a final cut that way. It's all so immediate. The speed with which we've been able to work on this project has been a real eye-opener for me."

In talking about the fluidity of the videotaping process, he harkens back to the belief held to this day by some primitive tribes that when one



takes a picture, one captures the subject's soul in some way. Frawley says that in a sense, he feels that's true of film, or at least truer of film than of videotape. With film, he says, there is a sense of "ownership" of the negative. You have captured someone's likeness which has been "fixed" by chemicals and which is now in a sense "owned" by you. Tape, by contrast, seems less permanent to him, more relaxed. With the monitors on in the studio, he would see an actor trying out a facial expression or gesture, watching him or herself in the monitor, altering the move, trying it again. There was much more of a feeling that "if this isn't right, we can change it, erase it, make it right."

"Actors feel more relaxed, more able to try something a different way. That's also communicated somehow to the camera operators. Video camera operators are used to talking to each other and to the director during shooting via headsets. They're all used to it. In video, the operator is more of a creative contributor than on a soundstage where the director works everyone through two or three rehearsals; then you shoot and the operator is more or less fulfilling requirements already set in advance."

Shelley, watching the editing with us, added that it's also easier to play with light and darkness on videotape, where the lighting can be done with the cameras on and the craftspeople looking directly at the picture they're working on as they light. "And for the money," adds the actress-turned-producer, "video has better 'tricks' and continuity is easier."

Frawley says the video situation is less formal than film, less intense. "Video almost has some sort of improvisational feel to it film doesn't."

The location shooting for HANSEL AND GRETEL was done with a pair of modified RCA TK-76's. All the original recording was done on B-type one-inch tape, even though the industry standard, if one in fact truly exists, is C-type. There's little argument that even though "C" is the more common format, "B" delivers a better original recording. Thus, FAERIE TALES is being originated on "B," transferred to cassette for workprint editing, mastered on "B," and dubbed over to "C" for delivery as end product; "C" format being required by virtually all networks, cable or commercial.

"Typically, says Frawley, 'we'd shoot a master shot and one cover on the first 'pass' at a scene, then two

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cover angles on the second pass."

Frawley concludes, "It's been a wonderful experience to use it (video) the way I have. Still, we must be careful that our emphasis is always on what's in front of the camera. The technology is only a means to an end, so to speak.

"On another level, I try to make films that are positive, optimistic, pro-life. Why? That's hard to put precisely into words; re-enforcement of the human spirit in art maybe; I just feel that needs to be done. The tradition of stories like HANSEL AND GRETEL is very old. Themes, hidden messages which communicate directly to the heart."

FAERIE TALE THEATRE would seem to be more representative of something new that's happening in Hollywood. Some very talented film people are starting to work out with videotape and like it. Although intended for end release on videotape, FAERIE TALES is being produced primarily by film people through a film studio, in film style. The team is demanding the quality we have come to take almost for granted from the practitioners of the "fine art" of film, but on a budget and schedule more common in the world of video. The video people are teaching the film people how production can be shot on relatively small budgets, in relatively little time, with *some* effects, anyway, that are by comparison vastly less expensive than film's opticals. The film people are learning that the computer can keep track of incredible amounts of visual information about their productions, organize it, and give them rapid access to it in a way they've never known.

By the same token, though, film is teaching tape: to tape professionally the energy in a pure creative concept; to avoid using technology just because it's there; to shape the tools of video too often used merely for speedy production; to serve the creative instincts of a cast and crew to put on the screen exactly what the *artists* have in mind without letting the product become just a function of the technology used to do the work.

Given the rising cost of film, any system which can streamline the production process and not only leave artistic integrity *intact*, but *enhance* it, is going to have an impact on Hollywood. Those more inclined to innovation and whose circumstances necessitate it will be embraced by the industry as a whole. It's true that



FAERIE TALE THEATRE was designed and intended from the beginning to be released on tape. The important thing, though, is that a group of highly-regarded film professionals are executing the project and finding, if anything, help instead of hindrance in the videotape format. It could almost as easily have been the plan to originate the series on film, go through the post-production process on tape and return to the chemical medium for the mastering and release. The initial cost and final visual quality would both have been greater, without doubt. The important point is that no matter what the end-release format, these people have been through a portion of or all of the creative process on tape, and found their work enhanced by it. At least in part because of the video process, you wind up with writer Resnick's final comment on the matter: "Because of the way Jim works and the nature of the other people involved, making this movie was almost like camp." A good deal of that comes through on the screen, too. Professionals should find FAERIE TALES something of a ground-breaker. Audiences should find it a delight. ■

#### NIGHT OF THE HUNTER

*Continued from page 1276*

gins to sing a hymn used as a leitmotif at several points in the film, *Leaning on the Everlasting Arms*. Rachel, sitting in the dark with her shotgun cradled in her lap, joins in the singing, supplying the harmony.

Billy Chapin and Sally Jane Bruce are excellent, the stalwart boy and the innocent girl mirroring perfectly the words spoken by Lillian Gish at the end of the picture: "Yes, for every child, rich or poor, there's a time of running through a dark place; and there's no word for a child's fear, and no ear to hear it if there was a word, and no one to understand it if they heard. God save little children! They abide and they endure."

Shelley Winters is impressive as the tragic widow. James Gleason is a fine river character and Evelyn Varden is true-to-life as the loudmouthed match-maker who bullies Winters into marrying the murderous preacher and is last seen leading a lynch mob at his trial.

Interesting use of animal symbolism occurs throughout. The children's flight is punctuated by shots of vulnerable animals—a frog, rabbits, a turtle, sheep. The preacher, frustrated by the escape of the children, emits a

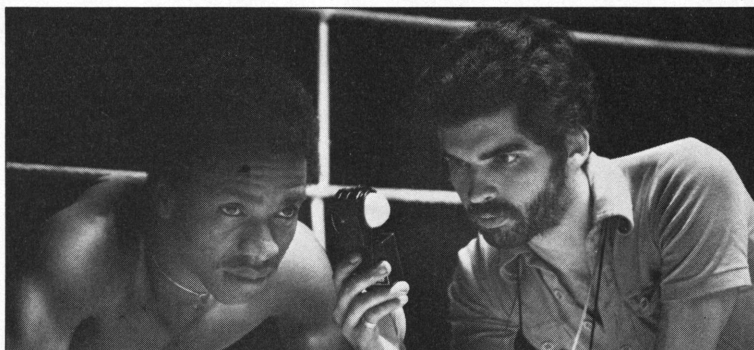
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wolfish growl which swells into a distorted howling. When Rachel blasts him with her shotgun, he yelps and whimpers like a wounded wolf. Rachel and her flock of children scurry single-file down the street like a mother quail and her young.

"Charles was a great student of D. W. Griffith," Cortez recalls. "Before the picture started we ran many of Griffith's pictures, not with the idea of copying Griffith but because Charles wanted to learn from him. He wanted to do certain things Griffith did. That Griffith-like iris-in shot, where we closed down on the boy in the basement window, was a matter of sheer necessity, however. We wanted to dolly in to the boy, but we couldn't get the camera that close no matter how much we tried, and even if we could get in there it would take too long. We had no zoom lenses available, so I used an iris that we used on lights. It was about five feet square and we had to oil it up because it hadn't been used lately and was rusty as hell.

"Photographically, that picture had many problems and there were certain scenes that didn't quite come off. Like the sequence around the back stairway, when the kids are crawling as Mitchum is chasing them—there was something that wasn't quite right. Problems because of the schedule—we had to make it in a certain amount of time—and, of course, it was Charles' first picture. No picture is a hundred percent; you'll find flaws in any picture, whatever it is—even GONE WITH THE WIND, even in a David Lean picture.

"Now we had certain sequences down the river with the children and Hilyard Brown did a hell of a job for us in the building of the river and the houses of Stage 15 at Pathe. The only way to get some points over was to stylize it. The skies were all lit artificially, and though it was in black-and-white it had a strange phosphorescent quality in it. Before the picture started, I made tests with Tri-X film to see what the film would do not only from a speed standpoint but from a dramatic point of view, which to me is more important. The technique is one thing and the dramatic concept is something else. In my book, the dramatic aspect is far more important, because through the dramatic concept the communication is made to the audience and this is the crux of the whole thing. I used Tri-X on certain sequences, but not throughout the entire picture, not for the speed value but for



the dramatic value. By that I mean the blacks. They had the luminous, phosphorescent light I wanted in certain sequences. Tri-X was used in the house where the children lived, with the little stairway going up the left side, and in two other sequences. But generally we used our normal film and a normal lens; nothing was pushed, nothing was forced."

Tri-X also was used in one of the more complex scenes, in which the children watch from a hayloft as Powell rides along a moonlit horizon on his stolen horse. "We built the hayloft almost to the top of the stage and had a half-moon doubled in," Cortez explains. "The stage was very small, and our idea was to give it some depth. That was a midget on a pony riding along, not Mitchum on a plow horse. It was shot from the top of the stage looking down. We used Tri-X because I wanted those blacks to go *black*, and it had nothing to do with the speed of the film, it was the color rendition, the tonal values. The impression was gotten over dramatically, a dramatic concept to communicate to the audience—sort of being colorful in black-and-white."

Although most of the picture was made on sound stages, some real exteriors were used. "Exteriors were made at the Rowland V. Lee Ranch, in the San Fernando Valley," Cortez says. "We built a street out there and at the head of the street we had a small, phony lake. For that sequence Jack Rabin, through very fine matte work, doubled in a real river steamer going across and it made that little lake look as though it were part of the Ohio River."

Undoubtedly the most striking sequences in the picture are the ones in which Mitchum murders Shelley Winters and another wherein fisherman James Gleason discovers her body sitting in a Model T Ford on the bottom of the river. Both scenes have an eerie "feel" that transcends what is contributed by the weird lighting, the design of the set and the acting of the players. According to Cortez, there is a strange reason for this.

"I am a devoted student of music, so much so that I use music a great deal to give me a clue to a given problem. While Charles was rehearsing Bob I was making certain preparations when Charles sat down and started to watch me. He said, 'Stanley, what in the hell are you doing?' I said, 'None of your damned business, Laughton'—in a nice way, of course. But he insisted. I said, 'Charles, I happen to be thinking

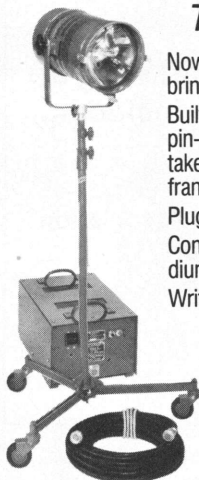
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of a piece of music right now.' And he said in a typical Laughton way, 'And, pray, may I ask what the music is?' I said, 'It's called *Valse Triste*.' There was a long pause, then he said, 'Damn it! How right you are! It *has* to be a waltz!'

"Then, he did something that never happened in my career before—it may even be unique in the industry. He sent for the composer, Walter Schumann, to come on the set and see what I was doing visually so that he, Schumann, could interpret it aurally! And that's how the waltz tempo of that scene got started.

"You may wonder why I thought of that particular piece of music. Composed by Sibelius, it was a part of a saga and told of a scene that takes place in a graveyard at one minute past midnight. Bones come to life and do a dance in sheer mockery of life, which was the exact thing Mitchum was doing because of the love and hate thing. That was what I had in my mind but I couldn't tell him because I was afraid he might think it was a phony thing on my part—which can happen—and I thought, 'Don't tell anybody.' I've used that idea on many occasions, thinking about certain pieces of music as a writer might think about something that could give him a clue to the opening line and get him started. With me, it's music. Charles appreciated the musical idea and tried to get the ballet thing into it, but that has nothing to do with what I'm telling you, which is only how I tried and in many ways succeeded in using music as a key to a lighting format. It has played an important part in my career."

The *Valse Triste* motif was carried over into the underwater sequence, which was filmed in a special tank at Republic Studio (now CBS Studio Center). "We had to create a spiritual effect," Cortez says. "I had eight powerful Titans—the strongest sun arcs available—on a huge crane suspended over the tank." The swaying of the water weeds and the flaxen hair of the dead woman create an almost hypnotic effect in these eerie scenes.

"The visual concept of the whole picture changes in the very last sequence, which is completely different from any other sequence in the picture," Cortez points out. "It was warm, like a Christmas party. It was Charles' thinking that he wanted to make it like that. He said, 'Stanley, I want to get the feeling here that this is a Christmas party wrapped up in a beautiful package and off they go.' I said, 'I know what you mean, Charles,' and this was



our approach. The relationship between Charles and myself was extraordinary in the sense of unity of concept, of a fusion of thinking. And so, the sequence at the end was so different, like night and day.

Cortez believes it is impossible to explain in so many words how the creative aspects of a film are achieved as opposed to the technical aspects. "I just did it. Either you do or you don't. You see something and you react, the juice is turned on and—boom!—you go. People say, don't you plan these shots? I say, to a degree I do, from the standpoint of lighting, but I must be elastic, I must be open, because when you read a script that's *one* impression, but when you look at a stage, and you hear actors speak in the actual set, it becomes a completely different thing. The mature cinematographer is one who can interpret these things on the spur of the moment. A spontaneous reaction, to me, is far more important than anything else. You may say, what about the lighting? It's true the lighting is already there; it's a question of using it in terms of dramatic content.

"I think the proper word is 'feel,' and that comes from you as a person and the awareness of what's happening in the world today. What has happened in the world thousands of years ago is part of your psyche, which is in the very depths of your soul. All these things come into play and either you're sensitive to these things or you're not, and if you are not you are a cinematographer who merely records instead of interpreting. It's the feel, the know-how; it's imagination; it's how you get the best out of nothing."

The picture was scored by Walter Schumann, who had gained widespread popularity for his work in the DRAGNET television series. The unusual music was scored for full orchestra, mixed chorus and solo piano. Much of it was based on Ohio Valley folk tunes and some back-country themes from West Virginia. The Protestant hymn, *Leaning on the Everlasting Arms*, which figures prominently as a leitmotif sung by the crazed preacher in contemplation of his next outrage, is utilized to fine effect. An RCA recording (1955) of the music, with narration by Laughton, has become a much-in-demand collector's item.

THE NIGHT OF THE HUNTER was too unusual a picture to be very popular in 1955. It was in black-and-white at a time when theaters were demanding color, in standard ratio even though Cinemascope had ushered in a wide-

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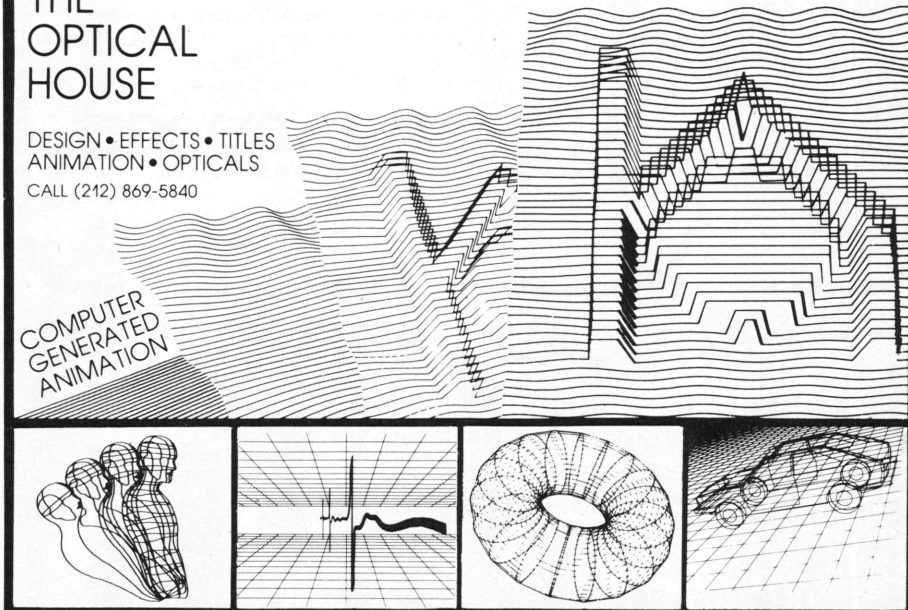
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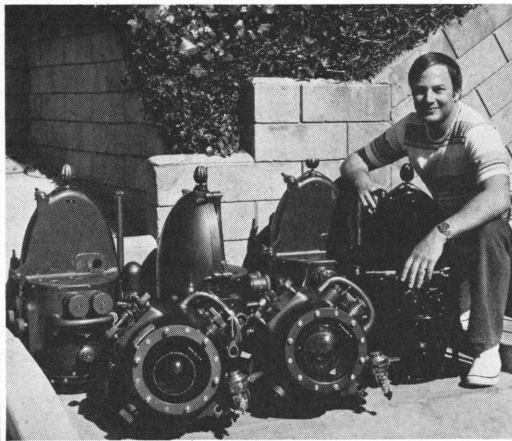


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screen "craze." It dared to depict a preacher—albeit one who says his religion is one "the Almighty and me worked out betwixt us"—as a murderer and pervert. This caused censorship problems in several states and resulted in an outright ban in Memphis. As Cortez explains, it created a worse situation in Europe. "It was banned in certain parts of the world because, although here we have many phony preachers, in Europe they don't have them. There, when you're a preacher you're a man of the cloth, you represent the guy above you. They don't know about these things so they resented seeing a guy in a white collar being a villain."

James Agee died during post-production. Otherwise, he would have received a heavy dose of the medicine he often dealt out during his years as a film critic. "Reviews were awful here," Lillian Gish wrote Paul Gregory from New York, adding: "Hope Charles did not read them." The West Coast reviews were kinder while expressing certain reservations. Variety assessed the picture honestly: "There will be no halfway reactions ... Patrons will either like it ... or loathe it. While it is a finely acted, imaginatively directed chiller with brooding power, the box-office draw ... is a debatable matter. The controversy it is bound to stir up will help, but ..."

"I think the lack of world acceptance of his picture hurt Charles' feelings to the point where it got him down," Cortez says. "He put so much effort into it and the great wit, this great talent Charles had, didn't, for some reason, come through."

"However, in contrast to that, in my book the picture was 'way ahead of its time, which is why it didn't quite get over. But in later years a kind of cult developed where they had clubs—NIGHT OF THE HUNTER clubs—and it suddenly became one of the "in" things, and as a result it is now more understood and more popular than it was then, because we as a people have a more open mind."

Tragically, Laughton was never to direct another film. Cortez worked with Laughton and Gregory for nine months in preparation for THE NAKED AND THE DEAD. "Something happened between Paul and the money men and suddenly the thing stopped. Later, RKO took it over and Raoul Walsh directed it." Laughton died in 1962.

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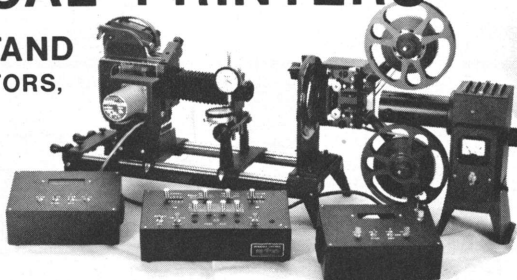
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"It was a joy, creating THE NIGHT OF THE HUNTER."

## NIGHT OF THE HUNTER

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| John                  | BILLY CHAPIN       |
| Pearl                 | SALLY JANE BRUCE   |
| Birdie                | JAMES GLEASON      |
| Walt Spoon            | DON BEDDOE         |
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| Executioner           | PAUL BRYAR         |

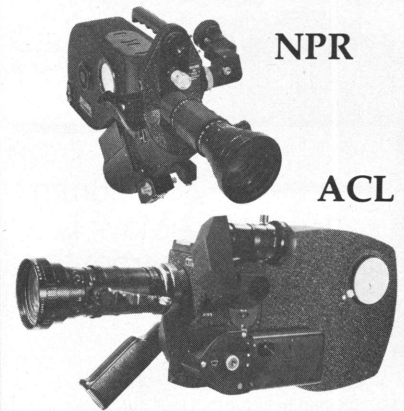
### CREDITS

|                         |                                   |
|-------------------------|-----------------------------------|
| Produced by             | PAUL GREGORY                      |
| Directed by             | CHARLES LAUGHTON                  |
| Screenplay by           | JAMES AGEE                        |
| Based on a Novel by     | DAVIS GRUBB                       |
| Director of Photography | STANLEY CORTEZ, ASC               |
| Music by                | WALTER SCHUMANN                   |
| Art Director            | HILYARD BROWN                     |
| Set Decorations         | AL SPENCER                        |
| Film Editor             | ROBERT GOLDEN                     |
| Wardrobe                | JERRY BOS                         |
| Property Master         | JOE LaBELLA                       |
| Makeup Artist           | DON CASH                          |
| Hair Stylist            | KAY SHEA                          |
| Sound                   | STANFORD HAUGHTON                 |
| Production Supervisor   | RUBY ROSENBERG                    |
| Assistant Director      | MILTON CARTER                     |
| Visual Effects          | JACK RABIN                        |
| Operative Cameraman     | BUD MAUTINO                       |
| Assistant Cameramen     | SEYMOUR HOFFBERG<br>ROBERT HAUSER |
| Gaffer                  | JAMES POTEBIN                     |
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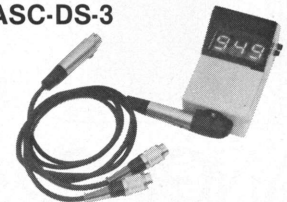
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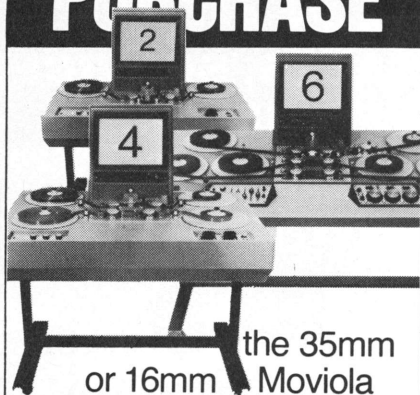
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## INDEX TO AMERICAN CINEMATOGAPHER

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### INDEX BY TITLE OR SUBJECT

A.F.I. SEMINAR WITH RICHARD KLINE, ASC. Page: 679 Issue: July

A.S.C. Remembers Goldwyn, Selznick and Zanuck at Gala Annual Affair. Page: 292 Issue: Mar.

Academy Awards, The 54th Annual, Lightman, Herb A. Page: 438 Issue: May

Academy Honors George Folsey, ASC, Dusing, Lyla. Page: 56 Issue: Jan.

Academy Honors Joseph B. Walker, ASC, Dusing, Lyla. Page: 446 Issue: May

Academy Scientific or Technical Awards Presentation. Page: 448 Issue: May.

ACCESS, Computerized Sound Editing, Garrott, Alan, Michael. Page: 667 Issue: July

ALTMAN SHOOT SUPER-16, Lightman, Herb and Duvall, Michael. Page: 889 Issue: Sept.

"ANNIE" ... and How It Was Filmed. Page: 556 Issue: June.

ART OF THE MOVIE MINIATURE, Maginot, Mike and Turner, George. Page: 1010 Issue: Oct.

"Best Cinematography" Nomination "RAIDERS OF THE LOST ARK": Interview with : Douglas Slocombe, BSC. Page: 448 Issue: May.

"Best Cinematography" Nomination "RAG-TIME": Interview with: Miroslav Ondricek, AIC. Page: 450 Issue: May.

"Best Cinematography" Nomination "REDS": Interview with " Vittorio Storaro, AIC. Page: 450 Issue: May

"Best Cinematography" Nomination "EX-CALIBER": Interview with: Alex Thomson, BSC. Page: 450 Issue: May

"Best Cinematography" Nomination "ON GOLDEN POND": Interview with: Billy Williams, BSC. Page: 450 Issue: May

BEST LITTLE WHOREHOUSE IN TEXAS, DESIGNING THE, Turner, George E. Page: 904 Issue: Sept.

BEST LITTLE WHOREHOUSE IN TEXAS, PRODUCTION MANAGEMENT FOR THE, Patterson, Richard. Page: 910 Issue: Sept.

BLADE RUNNER, Design & Photography, Lightman, Herb A. & Patterson, Richard. Page: 684 Issue: July.

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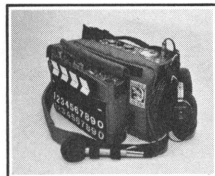
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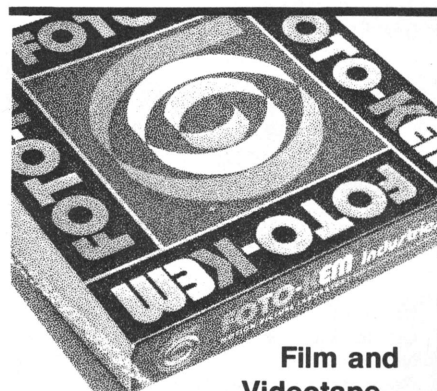
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BLADE RUNNER, Special Photographic Effects. Page: 692 Issue: July.

"CHALLENGER"—Anatomy of an Award-winning Documentary. Bogre, Michelle. Page: 150 Issue: Feb.

Clothes Encounters of the Filming Kind, Fauer, Jon. Page: 149 Issue: Feb.

COMPUTER ASSISTED FILMMAKING: COMPUTER MODELS, The Ultimate Story-board. Page: 768 Issue: Aug.

COMPUTER ASSISTED FILMMAKING: TIME CODE ON FILM Kodak's Transparent Magnetic Coating for Film. Page: 771 Issue: Aug.

COMPUTER ASSISTED FILMMAKING: COMPUTER RESEARCH & DEVELOPMENT AT LUCASFILM. Page: 773 Issue: Aug.

COMPUTER ASSISTED FILMMAKING: COPPOLA'S ELECTRONIC CINEMA SYSTEM. Page: 777 Issue: Aug.

COMPUTER ASSISTED FILMMAKING: MUSYNC, Computerized Music Editing. Page: 783 Issue: Aug.

COVERING THE FALKLANDS, Hesketh, Bernard as told to David Samuelson. Page: 1003 Issue: Oct.

CREATING VISUAL EFFECTS FOR G.W.T.W., the Inside Story for the First Time, Slifer, Clarence W.D. Page: 788 Issue: Aug.

DEAD MEN DON'T WEAR PLAID, CONTEMPORARY BLACK & WHITE CINEMATOGRAPHY, Goodhill, Dean. Page: 1181 Issue: Nov.

Digital Video. Page: 268 Issue: Mar.

Eastman Color High-speed Negative 5293, Williams, Allan L. Page: 46 Issue: Jan.

Eastman Color Print Film, Waner, John. Page: 391 Issue: Apr.

Electronic Camera, Wilson, Rick. Page: 234 Issue: Mar.

Electronic Camera Experiment, Brown, Thomas. Page: 28 Issue: Jan.

Electronic Color Control. Page: 355 Issue: Apr.

ELEPHANT PARTS, Production of a Video LP, Dear, William. Page: 695 Issue: July

EMMY AWARDS. Page: 1152 Issue: Nov.

"EVEREST IN WINTER," Challenges of Photographing, Shrimpton, Mike. Page: 570 Issue: June.

FEATHERCAM CM35, Carroll, John. Page: 881 Issue: Sept.

FIREFOX, SPECIAL EFFECTS FOR, Dykstra, John, Dorney, Roger, McCune, Grant, Sullivan, John, Beck, Mat & Trumbull, Don. Page: 912 Issue: Sept.

Fourth Houston International Film Festival, Lightman, Herb, A. Page: 590 Issue: June

FRAKER, WILLIAM ASC Gies, Martha. Page: 900 Issue: Sept.

GREGG TOLAND, ASC, Turner, George E. Page: 1144 Issue: Nov.

HAMMETT, CLASSIC LIGHTING FOR, Patterson, Richard. Page: 1168 Issue: Nov.

"HEARTBEEPS," Behind the Camera on. Page: 124 Issue: Feb.

"HEARTBEEPS" ... And How it was Filmed. Page: 122 Issue: Feb.

High Definition Television. Page: 224 Issue: Mar.

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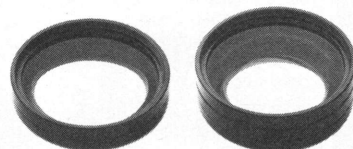
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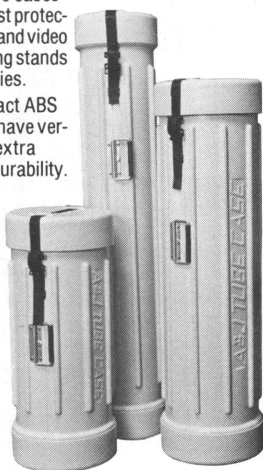
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HIGH SPEED BLOOD AND WORMS, Parks,  
Peter D. Page: 1028 Issue: Oct.

IFPA Workshops Focus on New Technology,  
Fisher, Bob. Page: 64 Issue: Jan.

Ikegami EC-35 Camera. Page: 343 Issue:  
Apr.

IMAX and "THE ERUPTION OF MT. ST.  
HELENS," Casey, Geroge. Page: 580 Is-  
sue: June

"JAZZMAN"—A Student Film that is More  
Than A Student Film. Page: 539 Issue:  
June

KARL BROWN: A HOLLYWOOD SAGE,  
Turner Geroge E. Page: 1014 Issue: Oct.

Karl Strus, ASC, A.S.C. Mourns the Pass-  
ing. Page: 158 Issue: Feb.

Kodak Honors "Best Cinematography"  
Nominees, Williams, Allan L. Page: 456  
Issue: May

Lighting Design for "WORKING." Page: 266  
Issue: Mar.

LIGHTING FOR 5293, Fisher, Robert A.  
Page: 1133 Issue: Nov.

LIGHTING FOR THE VIDEO CAMERA,  
Klages, William M. Page: 1127 Issue: Nov.

Lighting for Video. Page: 260 Issue: Mar.

LIGHTING STREET MUSIC, Bowen, Dick.  
Page: 1164 Issue: Nov.

Location Video-Do It Right!, Maisner, An-  
drew. Page: 382 Issue: Apr.

MAKING OF GUNGA DIN, Turner, George E.  
Page: 895 Issue: Sept.

MANHATTAN, CONTEMPORARY BLACK &  
WHITE CINEMATOGRAPHY, Goodhill,  
Dean. Page: 1188 Issue: Nov.

Manila International Film Festival 1982,  
Lightman, Herb A. Page: 336 Issue: Apr.

"MARCO POLO," The Filming of, Patterson,  
Richard. Page: 465 Issue: May.

Micro-computer for Optical Houses, Sparks,  
Colin. Page: 66 Issue: Jan.

Miniatures, Mattes and Magic, Swarthe,  
Robert. Page: 38 Issue: Jan.

MODULIGHT, Page: 1117 Issue: Nov.

Motion Picture Production Considerations in  
the 80s, Corman, Roger. Page: 339 Issue:  
Apr.

Movie Robot is Born, Gabriel, Judy. Page:  
128 Issue: Feb.

New York's Studio Complex for Film and  
Video Production, Forman, Milton. Page:  
176 Issue: Feb.

"ONE FROM THE HEART," Mating Film with  
Video for. Page: 22 Issue: Jan.

"ONE FROM THE HEART," Special Visual  
Effects for, Fielding, Raymond. Page: 30  
Issue: Jan.

"Oscarisms"—Little Known Oddities of the  
Awards, Biederman, Danny. Page: 460  
Issue: May.

Painting Sharks Underwater: a Cinematic  
Adventure. Page: 72 Issue: Jan.

Panacam, Gottschalk, Robert E. Page: 249  
Issue: Mar.

PHANTOM SET, Hollywood's Shrine to  
Scamps, Scoundrels & Monsters, Turner,  
Geroge E. Page: 673 Issue: July

PINK FLOYD THE WALL, NOTES ON, Pat-  
terson, Richard & Samuelson, David W.  
Page: 1021 Issue: Oct.

PINK FLOYD THE WALL: THE MAKING OF  
THE FILM BRICK BY BRICK FROM MY

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VIEW. Parker, Alan. Page: 1025 Issue: Oct.

Post Audio Processing, Potter, Stephen & Patterson, Richard. Page: 273 Issue: Mar. PRODUCTION DESIGN AND LIGHTING, Carmichael, Jae. Page: 1156 Issue: Nov. REBIRTH OF 3-D, Starks, Michael. Page: 985 Issue: Oct.

Recording Camera. Page: 545 Issue: June REVERSE BLUE SCREEN, Erland, Jonathan. Page: 916 Issue: Sept. SEA SALT, Hamilton, John R. Page: 1136 Issue: Nov.

SECRET OF NIMH, ANIMATION TECHNIQUES FOR THE, Patterson, Richard. Page: 808 Issue: Aug.

Shooting Flexibility, Lachman, JR., Edward. Page: 143 Issue: Feb.

SINGLE CAMERA VIDEO PRODUCTION, "Kudzu" & The CBS Electronic Cinematography System, Patterson, Richard. Page: 700 Issue: July.

Single Camera Video Production—Part I: Shooting "HARPER VALLEY P.T.A." with PANACAM, Schwartz, Howard. Page: 551 Issue: July

STAR TREK II, SPECIAL EFFECTS FOR MAMA EEL AND THE NEBULAE, Ralston, Ken. Page: 1035 Issue: Oct.

STAR TREK II, SPECIAL EFFECTS FOR THE GENESIS DEMO, Smith, Alvy Ray. Page: 1038 Issue: Oct.

STAR TREK II, SPECIAL EFFECTS FOR WARP SPEED AND BEYOND, Veilleux, Jim. Page: 1032 Issue: Oct.

Steadicam and "ONE FROM THE HEART," Brown, Garrett. Page: 44 Issue: Jan.

STEREOGRAPHY OF ROTTWEILER, Lipton, Lenny. Page: 995 Issue: Oct.

SUNDANCE INSTITUTE, Patterson, Richard. Page: 892 Issue: Sept.

TABLE TOP, Gillie, Jim. Page: 1140 Issue: Nov.

TAMING THE MYTHICAL MIRED, Glickman, Richard B. Page: 1123 Issue: Nov.

Tape or Film. Page: 225 Issue: Mar.

Tape or Film—Part II, Patterson, Richard. Page: 494 Issue: May.

"TAPS," Behind the Camera on, Roizman, Owen. Page: 350 Issue: Apr.

"THE DREAM OF DON GUADALUPE," Shedd, Ben, Brown, H.J. and Adams, Matt. Page: 475 Issue: May

The EMMY Award-winning Photography of "LITTLE LORD FAUNTLEROY." Page: 132 Issue: Feb.

"THE FACTS"—PANACAM ON LOCATION, Billie, Jim. Page: 885 Issue: Sept.

"THE SOLDIER," Photographing in All Kinds of Weather, Baldwin, Robert. Page: 368 Issue: Apr.

Tiffen Story, Wilson, Anton. Page: 136 Issue: Feb.

TRON, BACKLIT EFFECTS & ANIMATION FOR, Page: 796 Issue: Aug.

TRON, COMPUTER IMAGERY FOR, Page: 802 Issue: Aug.

TRON, SOUND EFFECTS DESIGN & SYNTHESIS FOR, Serafine, Frank. Page: 807 Issue: Aug.

TRON, THE MAKING OF, Patterson, Richard. Page: 792 Issue: Aug.

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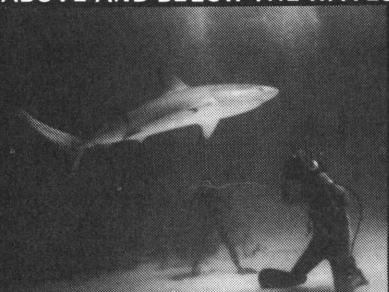
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ULTIMATE, Patterson, Richard. Page: 1040 Issue: Oct.  
VIDEO ADR, A Looping System for Videotape, Abernathy, Stephen. Page: 664 Issue: July  
Video Assisted Film Editing. Page: 297 Issue: Mar.  
Video Crew. Page: 242 Issue: Mar.  
Video Formats. Page: 387 Issue: Apr.  
Video Post Production. Page: 283 Issue: Mar.  
Video Synthesis: Real Time Analogue Special Effects, Gallant, Denise. Page: 597 Issue: June  
Visual Effects as a Cinematic Art Form, Gentleman, Wally. Page: 32 Issue: Jan.

## INDEX BY AUTHORS

Abernathy, Stephen, VIDEO ADR, A Looping System for Videotape. Page: 663 Issue: July  
Baldwin, Robert, "THE SOLDIER," Photographing in All Kinds of Weather. Page: 368 Issue: Apr.  
Biederman, Danny, "Oscarisms"—Little Known Oddities of the Awards. Page: 460 Issue: May  
Bogre, Michelle, "CHALLENGER"—Anatomy of an Award-winning Documentary. Page: 150 Issue: Feb.  
Bowen, Dick, LIGHTING STREET MUSIC. Page: 1164 Issue: Nov.  
Brown, Garrett, Steadicam and "ONE FROM THE HEART." Page: 44 Issue: Jan.  
Brown, Thomas, Electronic Camera Experiment. Page: 28 Issue: Jan.  
Carmichael, Jae, PRODUCTION DESIGN AND LIGHTING. Page: 1156 Issue: Nov.  
Carroll, John, FEATHERCAM CM35. Page: 881 Issue: Sept.  
Casey, George, IMAX and "THE ERUPTION OF MT. ST. HELENS." Page: 580 Issue: June  
Corman, Roger, Motion Picture Production Considerations in the 80s. Page: 339 Issue: Apr.  
Dear, William, ELEPHANT PARTS, Production of a Video LP. Page: 695 Issue: July  
Dusing, Lyla, Academy Honors George Folsey, ASC. Page: 56 Issue: Jan.  
Dusing, Lyla, Academy Honors Joseph B. Walker, ASC. Page: 446 Issue: May  
Dykstra, John, "Dorney, Roger, McCune, Grant, Sullivan, John, Beck, Mat & Trumbull, Don, FIREFOX, SPECIAL EFFECTS FOR. Page: 912 Issue: Sept.  
Erland, Jonathan, REVERSE BLUE SCREEN. Page: 916 Issue: Sept.  
Fauer, Jon, Clothes Encounters of the Filming Kind. Page: 149 Issue: Feb.  
Fielding, Raymond, "ONE FROM THE HEART," Special Visual Effects for. Page: 30 Issue: Jan.  
Fisher, Bob, IFPA Workshops Focus on New Technology. Page: 64 Issue: Jan.  
Fisher, Robert A., LIGHTING FOR 5293. Page: 1133 Issue: Nov.  
Forman, Milton, New York's Studio Complex for Film and Video Production. Page: 176 Issue: Feb.

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Gabriel, Judy, Movie Robot is Born. Page:  
128 Issue: Feb.

Gallant, Denise, Video Synthesis: Real Time  
Analogue Special Effects. Page: 597 Issue:  
June

Garrott, Alan, ACCESS, Computerized  
Sound Editing. Page: 667 Issue: July

Gentleman, Wally, Visual Effects as a Cine-  
matic Art Form. Page: 32 Issue: Jan.

Gies, Martha, FRAKER, WILLIAM ASC.  
Page: 900 Issue: Sept.

Gillie, Jim, TABLE TOP. Page: 1140 Issue:  
Nov.

Gillie, Jim, "THE FACTS"—PANACAM ON  
LOCATION. Page: 885 Issue: Sept.

Glickman, Richard B., TAMING THE MYTHI-  
CAL MIRED. Page: 1123 Issue: Nov.

Goodhill, Dean, DEAD MEN DON'T WEAR  
PLAID, CONTEMPORARY BLACK &  
WHITE CINEMATOGRAPHY. Page: 1181  
Issue: Nov.

Goodhill, Dean, MANHATTAN, CONTEMPO-  
RARY BLACK & WHITE CINEMA-  
TOGRAPHY. Page: 1188 Issue: Nov.

Gottschalk, Robert E., Panacam. Page: 249  
Issue: Mar.

Hamilton, John R., SEA SALT. Page: 1136  
Issue: Nov.

Hesketh, Bernard as told to David Samuel-  
son, COVERING THE FALKLANDS. Page:  
1003 Issue: Oct.

Klages, William M., LIGHTING FOR THE  
VIDEO CAMERA. Page: 1127 Issue: Nov.

Lachman, Jr., Edward, Shooting Flexibility.  
Page: 143 Issue: Feb.

Lightman, Herb A., Academy Awards, The  
54th Annual. Page: 438 Issue: May

Lightman, Herb A., Fourth Houston Interna-  
tional Film Festival. Page: 590 Issue: June

Lightman, Herb A., Manila International Film  
Festival 1982. Page: 336 Issue: Apr.

Lightman, Herb A. & Patterson, Richard,  
BLADE RUNNER, Design & Photography.  
Page: 684 Issue: July

Lightman, Herb and Duvall, Michael, ALT-  
MAN SHOOT SUPER-16. Page: 889 Is-  
sue: Sept.

Lipton, Lenny, STEREOGRAPHY OF ROTT-  
WEILER. Page: 995 Issue: Oct.

Maginot, Mike and Turner, George, ART OF  
THE MOVIE MINIATURE. Page: 1010 Is-  
sue: Oct.

Maisner, Andrew, Location Video—Do it  
Right!. Page: 382 Issue: Apr.

Parker, Alan, PINK FLOYD THE WALL: THE  
MAKING OF THE FILM BRICK BY BRICK  
FROM MY VIEW. Page: 1025 Issue: Oct.

Parks, Peter I., HIGH SPEED BLOOD AND  
WORMS. Page: 1028 Issue: Oct.

Patterson, Richard, BEST LITTLE WHORE-  
HOUSE IN TEXAS, PRODUCTION MAN-  
AGEMENT FOR THE. Page: 910 Issue:  
Sept.

Patterson, Richard, HAMMETT, CLASSIC  
LIGHTING FOR. Page: 1168 Issue: Nov.

Patterson, Richard, "MARCO POLO," The  
Filming of. Page: 465 Issue: May

Patterson, Richard, SECRET OF NIMH, ANI-  
MATION TECHNIQUES FOR THE. Page:  
808 Issue: Aug.

Patterson, Richard, SINGLE CAMERA  
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CBS Electronic Cinematography System.  
 Page: 700 Issue: July  
 Patterson, Richard, SUNDANCE IN-  
 STITUTE. Page: 892 Issue: Sept.  
 Patterson, Richard, Tape or Film-Part II.  
 Page: 494 Issue: May  
 Patterson, Richard, TRON, THE MAKING  
 OF. Page: 792 Issue: Aug.  
 Patterson, Richard, ULTIMATTE. Page:  
 1040 Issue: Oct.  
 Patterson, Richard & Samuelson, David W.,  
 PINK FLOYD THE WALL, NOTES ON.  
 Page: 1021 Issue: Oct.  
 Potter, Stephen & Patterson, Richard, Post  
 Audio Processing. Page: 273 Issue: Mar.  
 Ralston, Ken, STAR TREK II, SPECIAL EF-  
 FECTS FOR MAMA EEL AND THE  
 NEBULAE. Page: 1035 Issue: Oct.  
 Roizman, Owen, "TAPS," Behind the Cam-  
 era on. Page: 350 Issue: Apr.  
 Schwartz, Howard, Single Camera Video  
 Production—Part I: Shooting "HARPER  
 VALLEY P.T.A." with the PANACAM. Page:  
 551 Issue: June  
 Serafine, Frank, TRON, SOUND EFFECTS  
 DESIGN & SYNTHESIS FOR. Page: 807  
 Issue: Aug.  
 Shedd, Ben, Brown, H.J. and Adams, Matt,  
 "THE DREAM OF DON GUADALUPE."  
 Page: 475 Issue: May  
 Shrimpton, Mike, "EVEREST IN WINTER,"  
 Challenges of Photographing. Page: 570  
 Issue: June  
 Slifer, Clarence W. D., CREATING VISUAL  
 EFFECTS FOR G.W.T.W., The Inside Story  
 for the First Time. Page: 788 Issue: Aug.  
 Smith, Alvy Ray, STAR TREK II, SPECIAL  
 EFFECTS FOR THE GENESIS DEMO.  
 Page: 1038 Issue: Oct.  
 Sparks, Colin, Micro-computer for Optical  
 Houses. Page: 66 Issue: Jan.  
 Starks, Michael, REBIRTH OF 3-D. Page:  
 985 Issue: Oct.  
 Swarthe, Robert, Miniatures, Mattes and  
 Magic. Page: 38 Issue: Jan.  
 Turner, George E., BEST LITTLE WHORE-  
 HOUSE IN TEXAS, DESIGNING THE.  
 Page: 904 Issue: Sept.  
 Turner, George E., GREGG TOLAND, ASC.  
 Page: 1144 Issue: Nov.  
 Turner, George E., KARL BROWN: A HOLLY-  
 WOOD SAGA. Page: 1014 Issue: Oct.  
 Turner, George E., MAKING OF GUNGA DIN.  
 Page: 895 Issue: Sept.  
 Turner, George E., PHANTOM SET, Holly-  
 wood's Shrine to Scamps, Scoundrels &  
 Monsters. Page: 673 Issue: July  
 Veilleux, Jim, STAR TREK II, SPECIAL EF-  
 FECTS FOR WARP SPEED AND BE-  
 YOND. Page: 1032 Issue: Oct.  
 Waner, John, Eastman Color Print Film.  
 Page: 391 Issue: Apr.  
 Williams, Allan L., Eastman Color High-  
 speed Negative 5293. Page: 46 Issue:  
 Jan.  
 Williams, Allan L., Kodak Honors "Best Cin-  
 ematography" Nominees. Pages: 456 Is-  
 sue: May  
 Wilson, Anton, Tiffen Story. Page: 136 Is-  
 sue: Feb.  
 Wilson, Rick, Electronic Camera. Page: 234  
 Issue: Mar.

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MAGNASYNC interlock unit, 3 playback machines model #2216-E-11 (16mm), Selsyn interlock motors, floor mounted, film footage digital counter, sync motor for film projector, remote distribution panels for playback setup, excellent condition, \$6,000. Must sell. (813) 985-8934.

MISC. EQUIP. for sale, 85mm Zeiss Planar, \$600. 50mm C-mount, \$100. 25mm Switar, \$200. 3-wheel collapsible dolly, \$100. NCE tripod, \$300. MA-11 amp & Auricon/CP sound heads, best offer. (212) 686-1610.

35 ARRI equip: 25-250 Ang., 2 mounts, 1.6x Ang., \$3,600. Cine 60 flat base, \$300. 40 Macro, 4 filters, \$350. Arri 1000' mag, fits 2C, \$350. (2) 16mm Gordon gun cameras w/bore scope, \$550, complete. 400' 16BL mag, \$300. CP 16-R-P, bloop light & sync pulse, Ang. finder, 12, 120 Ang., 4 mags & more, mint, \$6,800. BEAU PEAUSE, 5841 Nagle Ave., Van Nuys, CA 91401, (213) 994-1055.

CP 16RA, 10-150 Ang., 2 mags, 2 batts, 2 chargers, filters, sound system, Halliburton case, mint condition, (213) 477-5219 or (213) 626-2010.

16MM KODACHROME specialist. Film: \$14.95/roll, \$14.80/6+ rolls, plus UPS. A-H Co. (201) 561-8123 until 9:30 p.m.

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MOVIOLA M-35BH, 35mm flatbed editing table. (215) 295-3673.

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